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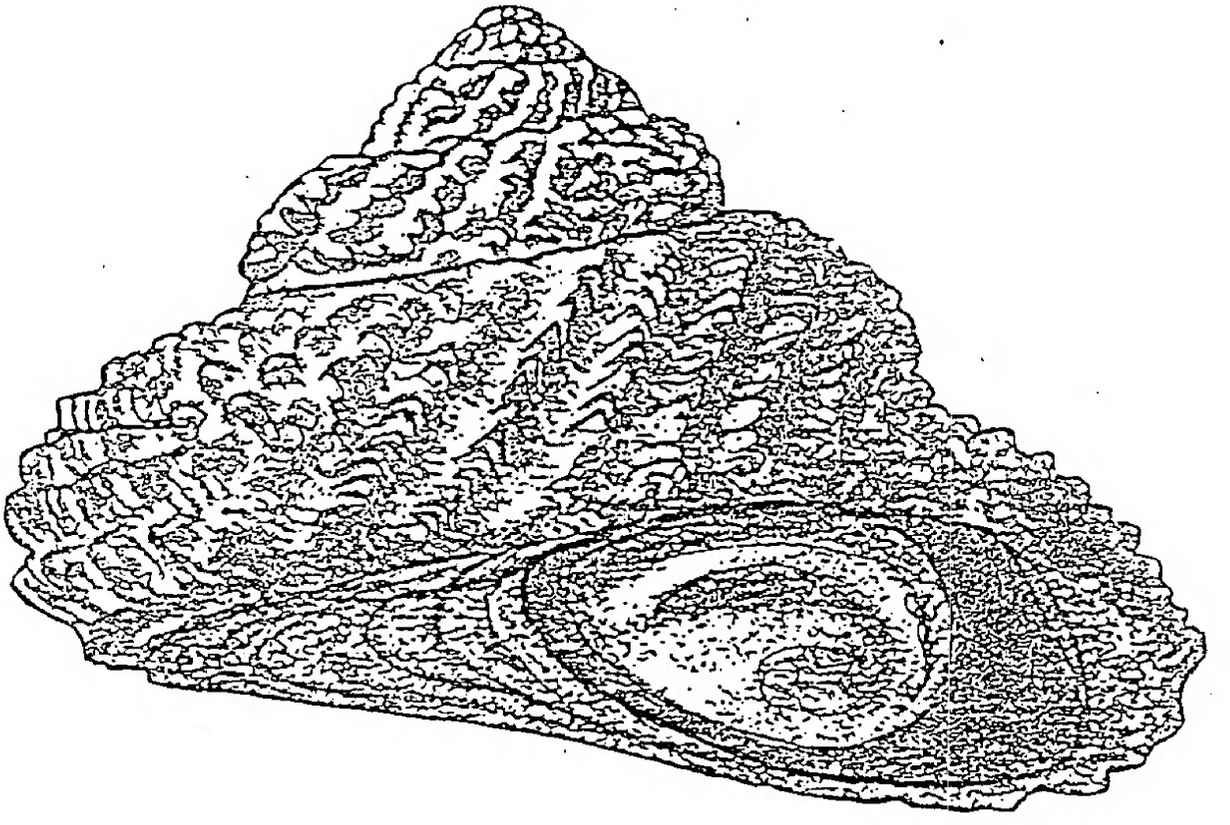

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WELLINGTON SHELL CLUB

1996

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EDITORIAL

It has been a special pleasure for me to have edited this particular issue of *Cookia* since I was one of that enthusiastic team who made up the Chatham Islands 1954 Expedition, the results of which still form, amongst other things, a baseline for studies of the Mollusca of the Chatham Islands.

That expedition was a great experience for all of us at the time; and time, itself, has not dulled the memory of the excitement and enjoyment which we shared then.

Of the seven marine biologists who took part in the expedition, four were already established professionals in their fields but three of us were still students poised on the threshold of our own careers. In my case, at least, participation in the Chatham Islands 1954 Expedition led to the making of my decision to follow a chosen path in science. On our return from the Chathams I spent some months completing my thesis (on the ecology and population biology of the Tuatua or, as we called it locally, the New Brighton "Pipi" at that time known as a species of *Amphidesma*). I was then offered a job in the Geological Survey by Dr C.A. Fleming to work on Triassic molluscs (things like *Monotis* 200 hundred million years old!). At the same time Mr J.W. Brodie, Director of the newly-formed New Zealand Oceanographic Institute, asked me me if I would like to join them as a benthic ecologist. The two bits of paper eventually came together on the table of some DSIR administrator, so I had to make a decision. As a result of my recent experiences of dredging and trawling on the Chathams expedition, I said I liked my molluscs alive rather than dead - so I became an oceanographer! My other two student colleagues on the expedition, John McIntyre and John Yaldwyn, were, I think, similarly stimulated towards satisfying careers, one as a University Lecturer specialising in benthic ecology and molluscan aquaculture, the other as a Museum Director and an internationally-recognised authority in Crustacean taxonomy.

Hence the Chatham Islands 1954 Expedition did more than simply pioneer the way for much subsequent deep sea research as the first locally-organised deep sea exploration since the days of the epic visit of HMS *Challenger* in 1874.

It is my wish, now, to dedicate such efforts as I have made as editor of this issue of *Cookia* to the memory of our late colleague of the expedition, Dr John McIntyre, who sadly died in Australia in June of this past year. I have happy recollections of 46 years of good friendship with him, in particular the time we spent along the sandy beaches of Pegasus Bay and Banks Peninsula and, especially, the days of the Chatham Islands 1954 Expedition.

THE CHATHAM ISLANDS - BACKGROUND PREPARATION

By John Marston & Elliot Dawson

The Chatham Islands are truly steeped in history - Moriori, Maori, European, and Nature itself. The flora and fauna, geography and geology, farming and fishing, economic potential and tourism opportunities - all have had much written about them and everything is of great interest and whets the appetite of a would-be visitor to this still quite remote outpost of New Zealand. It is, therefore, a good thing to prepare for the experience which a visit to the Chathams offers by reading widely and deeply about them ... Hence, we offer a selection of the wide range of books and articles that are available, some sadly now quite rare, but generally all awaiting the reader's pleasure through the public library system. We have chosen items in which there can be found references to further reading, and we have no doubts but that the reader will quickly be bitten by the Chathams "bug" and want to get on the next plane. The lure of the islands is very strong!

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THE CHATHAM ISLANDS 1954 EXPEDITION - HOW IT WAS ...

By R.K. Dell

As New Zealand scientists interested in marine research began to settle down to normal after World War II, and looked at areas we should be investigating, we realised that we knew very little of the seas around us. What little we did know came from work carried out by overseas expeditions starting with the *Challenger* in 1874. For the Mollusca, Suter's Manual was still our only real text book and many of us drooled over the records of shells from 110 fathoms (201 metres in to-day's terms) off Great Barrier Island, and even these had been obtained by a party organised by Charles Hedley from Sydney in 1904.

A Pacific Science Congress held in New Zealand in early 1949 was our first post-war congress to attract overseas paticipants. We met some distinguished oceanographers and learnt of major developments in equipment and techniques, many of which had resulted from war time research. Later that year the survey ship HMNZS *Lachlan* arrived in New Zealand and her Captain indicated he would be prepared to carry out other research in the course of the hydrographic surveys which were its official task.

In 1951 the Council of Scientific and Industrial Research set up a N.Z. Oceanographic Committee with members drawn from the universities and government departments to advise on possible oceanographic programmes. Visits by two overseas expeditions about this time acted as major catalysts. The British RRS *Discovery* II worked off our coast in late 1950 and early 1951, and three New Zealand scientists were invited to join the cruises. Then in the summer of 1951-52 came the Danish research ship *Galathea* to carry out a series of cruises between Campbell Island and the Kermadecs, with special attention to collecting from deeper water. The leader, Dr Anton Bruun, was a strong advocate of international cooperation in science and put this principle in the most practical way. He gave full opportunity for groups of New Zealand scientists to join these cruises and to share in all the activities. Those of us who had this experience found ourselves looking in a different direction for the future. Some of the gear on the *Galathea* was very sophisticated, but in practice we realised that, given a moderate sized winch, some steel cable and some relatively simple dredges and trawls, the only real difference between obtaining a sample of animals from 1000 metres or more and what we had already been doing in 20 metres was that you needed more patience and time to carry it out. We came back from our *Galathea* experience wondering why we hadn't already done some of this deep sea stuff ourselves.

On the N.Z. Oceanographic Committee we began to plan what eventuated as the "Chatham Islands 1954 Expedition", designed to sample the life on the Chatham Rise between Christchurch and the Chatham Islands, the deeper waters around the Chathams and, to a lesser degree, the shallow water life around the Chathams themselves. One of our non-governmental members, Mr George Knox (subsequently Professor) from the University of Canterbury (then known as Canterbury University College), was chosen as leader, and funds were made available from government sources and from some universities and museums. Alex Black's small vessel, the *Alert*, only 22 metres long, was hired for the expedition. The venture proved extremely successful, some 60 bottom stations were worked and an immense amount of material was collected. No less than 19 stations were established in depths greater than 200 metres, the deepest at 710 metres. Much of its success was undoubtedly due to Alex's expertise in boat handling and his skill in operating trawls and dredges.

The first three stations were worked on the Mernoo Bank, an area with an interesting fauna. These stations were in relatively shallow water but the gear worked perfectly. We then moved on to the Chatham Rise itself and obtained material from 360, 549, 403 and 512 metres. I personally could hardly believe my eyes as these first deep water samples came on board and

were washed through a series of sieves. My first feelings as I looked at the shells were that we had sampled some South Island Tertiary fossil beds with a host of large Turrids and Naticids - but they were alive! Then I saw *Iredalina mirabilis* (still considered very rare in those days), *Fusitriton*, *Galeodea*, and *Eucirroa* among the larger shells. The wonder at the wealth of rare and new species continued throughout the cruise and renewed when the fine fractions were sorted and examined under the microscope back in the museum.

Most of the participants in the expedition found the material from the deep water stations on the way to and from the Chathams the most exciting. And all of us gradually realised that we could now tackle this problem of investigating the deep water for ourselves - and since then we *have*.

WELLINGTON SHELL CLUB TRIP TO THE CHATHAMS

By Jenny Raven

On Monday 24 January 1994 Doreen Burr and I flew out of Wellington by Chathams Air to join three other members of the Wellington Shell Club (Don Watson, his son Donald and John Marston) who were already there. When I had phoned the hotel the night before to check the weather and food situation I found they had taken over the hotel kitchen and were even answering the phone. Surprisingly they said it was warm and no different from Wellington.

On the plane I read a *New Zealand Geographic* about the Chathams. It was a long article and the two and a half hour flight passed quickly. Just endless waves beneath. The packed lunch provided by Chathams Air was soon eaten and then all too soon we got our first sight of land. Endless lagoons as the plane circled lower and lower and then we were down. There was no welcoming party to greet us. Doreen and I sat down on the tarmac as everybody else left. I ran inside the empty terminal building and rang the hotel. Our fellow members had left earlier in the morning to pick us up so we went back and waited. Then the pilots, the last to leave, were going. They offered to give us a ride in their vehicle so rather than be left alone in this deserted landscape we accepted.

The two pilots chatted about life on the Island. After ten minutes of bumping along I realised how hot it was - my two jackets came off. Shortly after, a vehicle sped past; it was the other three. We waved but they kept on going. Eventually we arrived at the pilots' destination. We got out and before long the others were back. They had the hotel rental vehicle - a new four wheel drive, double cab hilux-luxury! After much discussion and being told they had found all the shells on the Island, we headed for the township of Waitangi and booked in at the hotel.

It was still early afternoon and the others proposed we go to Owenga, about 45 minutes drive away on the eastern side of the Island. Since the other three had already been there I was sure there would be no shells left for us. How wrong I was. On a small shelly beach (called Shelly Beach!) just north of Owenga there were shells everywhere and what a delight - *Cominella nassoides iredalei* was common as were sponges containing large double *Chlamys dieffenbachi*, *Gari hodgei* and *Gari stangeri*. *Turbo granosus* was the most common member of the turban family. Similarly *Lepsithais lacunosus* was common and *Thais orbita* absent. Also present was *Austrofusus chathamensis*, *Cantharidus opalus cannoni*, *Calliostoma punctulata*, *Tanea zelandica* and *Xymene ambiguus*. Rare finds were *Monodilepas skinneri* in the shell grit, and a *Haliotis virginea morioria*. It was hard to stop looking. After a while Donald started a fire going on the beach and as dusk fell at about 9pm, we grouped around the fire eating barbecued paua that the others had collected earlier in the day and exclaiming over our finds.

The discussion continued back round the table in the hotel kitchen. John Marston started compiling a check list to compare against the "Chatham Islands 1954" Expedition. We talked to a hotel guest who was cooking his dinner and then watched a video of the two Dons' underwater dive a few days earlier. Even the hotel cat tried to keep us from bed by chasing a mouse up and down the passageway and in and out of our bedrooms. It had been a long day.

Tuesday dawned fine and warm. The consensus was to drive to the northern part of the island - the only part the others had not yet covered. We headed north on the unsealed roads alongside the Te Whanga lagoon. Past Blind Jim's Creek where fossilised sharks' teeth wash up. A short way along the northern coastline we reached Taupeka Point. This was where John said an earlier Geological Survey trip had noted extensive shell washups. We had to drive through a farm to get to the coast but John was an expert at getting us permission. None of the locals refused after his expert compliments. We were able to park close to the beach. The Point comprised low lying tussock and dunes at the south end of a long bay. It had also been a battleground in Moriori history. We first started picking up single valves of *Chlamys*

gemmulata, some over 60mm in size and in a variety of colours. Then I found a nice whole, double white one in a sponge. Then a few *Haliotis chathamensis morioria*. They were common, though slightly worn, at this site as were large wide banded *Buccinulum vittatum bicinctum* about 35mm in size. It took about half an hour to walk around the Point. On route we found good *Austrofusus chathamensis*, *Cantharidus opalus cannoni*, *Calliostoma punctulata*, *Argobuccinum tumidum*, a few double *Glycymeris modesta*, *Cominella nassoides iredalei* and tantalising pieces of *Calliostoma tigris chathamensis*. It was a treasure trove of washups. The tide had gone out and returned and none of us had gone near the water - the washups were too interesting! In the furtherest most bay I picked up a worn but nearly whole *Alcithoe wilsonae* . The hunt was then on and between us about another six in varying states were found, mostly high up near the dunes. Finally we returned to the vehicle. We were all in high spirits as we ate our lunch in the sunshine.

We then travelled on to Kaingaroa, a small fishing village. The tide was coming in when we reached the beach and although there were pockets of shell sand it was hard to stay interested. We were walking back amongst the fishing shacks when I spotted some craypots which merited a second look. I just about had my head inside one when a voice called out. A man was looking over the fence. Rather than the telling off I was expecting he said "Is this of any use?" and next minute a shell shape went flying over the fence. In a one handed dive I caught a large *Semicassis pyrum* before it hit the ground. Suddenly all interest in craypots disappeared and the five of us were interestedly gathered at the fence. Our fisherman friend invited us in. We had coffee, met his wife, saw his satellite dish where he picked up American television, and came away with black coral, one good *Calliostoma tigris chathamensis* (off the top of the fridge!) and one near perfect *Alcithoe wilsonae*. He said his fellow fishermen might have more and he would ring us at the hotel. Returning home we stopped at Blind Jim's Creek to have tea. However we couldn't resist looking for sharks' teeth in the lagoon first. About twenty were found. Donald seemed to be the expert at finding them. We finished the day eating crayfish from the back of the vehicle. About 11pm we arrived home for more talk, adding to the checklist and watching more underwater videos. The proprietor had long gone to bed.

Wednesday again dawned sunny and warm. We decided we would look around home base. To the south Waitangi beach ends at the wharf. Past this are the steep cliffs of Hanson's Point with a few rocks and sand exposed at base at low tide. Don and Donald went for a dive off the Point. The rest of us fossicked around at the base of the cliffs. Very nice clean *Cellana strigilis chathamensis* were relatively common.

Doreen and I were first back to the hotel and decided to walk along the long stretch of sand north of the hotel that fronts Petre Bay. This proved to be quite interesting - lots of double angle wings (*Anchomasa similis*), nesting cockles (*Modiolarca impacta*), tuatuas, ribbed muscles (*Aulacomya ater maoriana*) and the red mussel (*Modiolus aerolatus*); also a few *Cantharidus opalus cannoni*, *Lepsithais lacunosus*, some large *Cabestana spengleri* and some very nice *Haliotis virginea morioria*. The others were having lunch in the sun on the lawn when we returned. The divers were happy. They had found a live *Calliostoma tigris chathamensis*, a live *Haliotis virginea morioria* and a nice *Buccinulum lineum* plus crayfish. A weka entertained us during lunch by running in and out of the bush and around the hotel satellite dish.

In the afternoon we decided to return to Owenga. One of the locals at Owenga had answered an advertisement for shells that I had placed on their local television network (there being no newspaper), and we arranged to visit. This proved well worth it. The lady had worked in the fish factory and set aside some shells of interest. We came away with several file shells, *Limatula maoria*, as well as *Chlamys gemmulata* and a nice *Calliostoma pellucida morioria*.

It was then time to visit the statue of Tommy Solomon, the last full blooded Moriori, after first asking permission to travel through private land. The statue stands well back from the road in a commanding position overlooking the sea at Manukau Point. As we stood alongside it for

photos the weather was changing. It was now getting cold in shorts and bare legs. Undaunted we had a quick look around the Owenga wharf, nothing there in the way of shells - then down onto the first of the pebbly beaches that run for a mile or so before ending back at our shelly beach. There were shells to pick up all the way along. The waves crashed in off shore racing up the beach and dropping off shells as we went. We got rained on twice but went on unperturbed. Nearer Shelly Beach fresh *Cominella nassoides iredalei* were found on the high tide line. Don found one with the dead animal still in it. I found a few with good pink to orange colouring. Lots more sponge was washed up with *Chlamys dieffenbachi* inside. I found a nice double "*zeelandona*". At Shelly Beach Donald had the fire going. Most of us stopped to eat but Doreen as usual needed a loud hailer to bring her in; with bags full and head down she went on collecting till dark. We were all wearing all the clothes we had with us as we stood around the fire in the now darkening skies.

Next morning our friendly fisherman at Kaingaroa phoned to say he had more shells. We decided to first try Okawa Point on the north eastern tip of the Island where our fisherman friend had said many shells washed up. We stopped on route at Matarakau Point just along from Taupeka that had been so profitable a few days earlier. Don and John went one way round it and Doreen, Donald and I, the other. The shelly sand was coloured pink from thousands of *Radiacmea inconspicua* washed up. Don and John returned with an average *Calliostoma tigris chathamensis.*

We carried on. Just short of Kaingaroa we turned into the farm that we had been told to ask permission at, to go out to Okawa Point. Permission was granted and we were off through a farm gate and out across tussocky paddocks. Large dunes were between us and the beach as we lunched in the sun amongst the sheep. We could hear the sea on the other side. It was still further to travel to the Point. The farm track was no longer but our four wheel drive, expertly driven by Donald, lurched its way through the tussock. The animals were now left behind - none would survive here - as we made our way through a forest of tall karaka trees stripped bare of vegetation, their gnarled branches outstretched to the elements. Then the Point was in sight - a flat piece of land surrounded by white beaches.

We were able to drive right down to the beach. The first beach was absolutely rich in shell sand. We all had to take some. John filled bags. We then started walking. Perhaps after Taupeka we had been spoilt because although this Point was thick in shells, most seemed worn and bleached; holed *Calliostoma tigris chathamensis* were common. No-one found a good one. Nevertheless some interesting finds were made. I found an ancient old *Thais orbiter* - the only one seen. *Chlamys dieffenbachi* in sponge were particularly common and many had escaped bleaching in the sponge. The doubles from here were the biggest yet and I was particularly pleased on breaking open one piece to find a double yellow and purple striped "*zeelandona*" inside.

The road out was better than the way in and we were soon back on "state highway 1" and ten minutes later had arrived at Kaingaroa and our friendly fisherman's house for tea and a chat. We left with another *Calliostoma tigris chathamensis*, red coral, an excellent *Charonia*, and some *Argobuccinum tumidum*. We tried to get out to Cape Young along the northern coast on our return, but this proved rather elusive for although we drove through paddocks up the back of it we found it stuck out into the sea and appeared surrounded by cliffs on all sides. We stopped in a paddock for tea on the way back and munched our way through the crayfish the divers had caught the previous day.

Our fifth day. We took the Port Hutt road. The others had been here before we arrived to arrange their first dive. Unfortunately the weather was still not right to take the boat out so the divers decided to dive off a nearby point. Doreen, John and I busied ourselves looking among the low tide rocks and beach at Port Hutt. There were lots of small *Buccinulum vittatum bicinctum* under rocks near the open sea but near the harbour beach and small wharf I found

some lovely narrow orange/ chocolate banded *bicinctum*. On the beach proper some nice fresh *Cantharidus opalus cannoni* were caught in the brown weed. On the far side of the bay past the old wreck which dominates the bay, large dark *Cellana strigilis chathamensis* sat on the rocks. It was an interesting place. The divers returned with crayfish and a nice large *Buccinulum pertinax* (*marwicki* form). They were, however, disappointed not to find live *Haliotis virginea morioria* or *Calliostoma tigris chathamensis*.

We then took the road that leads to the coast north of Port Hutt. On route at Maunganui we stopped at the oldest stone building still standing on the Chathams. Built by the German missionaries last century, it stands alone in a paddock of sheep under an imposing rock. I had to take a photo for a relative of the missionaries back in Wellington. Two other visitors arrived before we left and surprisingly I found I knew one of them.

Another beach, Cape Pattison, was nearby. We stopped to ask directions to get out to it at an old homestead at Waitangi West where the occupants grew their own produce. Soon we were on the beach speeding along the sand towards the Cape. However once there, there were few shells. It was windswept and cold. However we had yet to find *Montfortula rugosa* and these rocks looked not unlike the ones at Kaikoura where they are found on the mainland. Don found the first one and then the hunt was on as the cold was forgotten. All were lightly covered in water; some were in the open in midtide pools but most were on the underside of shallow ledges. They were not common and not easy to find but we all found a few.

Saturday was a recovery day around Waitangi. Don and Donald snorkled out into the bay in front of the hotel. John lent me his wet suit and I went fossicking amongst the low tide rocks under the wharf. The Police dog followed my every move and looked under every rock I turned. However nothing of interest eventuated. When the two Dons returned with a number of nice sparsely lined *Buccinulum lineum* I decided I would have to get wet. I floated off in about one metre of water. I wasn't keen to go much deeper but at least it was calm. Looking through the mask I saw large paua covering the rocks. The bottom was rocky but sandy. Nestled on ledges and partly covered in sand were lined *Buccinulum*. They weren't particulary common and were not easy to spot. *Cominella maculosa* crawling in the open were common. A couple of orange tinted, distinctly tiger striped ones caught my attention. Over towards the fish factory large examples of *Cookia sulcata* were everywhere. Finally the cold drove me out but not before the hotel cook had come out and asked me to collect some paua for tea. Not everyone will have had a swim at the Chathams. The locals watching out the hotel window were most interested.

In the afternoon we took the vehicle south towards Port Durham to deliver some goods to a contact of Doreens. We were shown through a lovely old homestead and grounds. Wind power provided the electricity and the upstairs windows looked out over lovely grounds to the sea. The owners showed Don a good diving spot for crayfish. That night we returned to our favourite shelling haunt at Owenga for another barbecue tea and more shelling.

Sunday our last day. The two Dons got up at dawn and went diving. They returned with a crayfish for each of us to take home. We then returned to our other favourite spot - Taupeka Point. John, Doreen and I remained there while the other two took the vehicle along the coast for a dive. Nothing further had washed up and nothing new was found. However the tide was low and I decided to inspect the pools. At the spot where the large broad banded *Buccinulum vittatum bicinctum* had washed in I waded out and started turning over rocks. I never found any large ones but small ones with two broad bands were numerous. I turned over a rock that had weed growth and ribbed mussels attached to the underside and there amongst the muscles were the cleanest, most perfect *Montfortula rugosa* I have seen. I never found any more as most rocks were washed clean on the underside.

Our vehicle returned. Unfortunately no diving had eventuated and they had almost got the vehicle stuck in the sand. We carried on towards Kaingaroa to pay our friendly fisherman a last

visit. We stopped first at Hapupu reserve to see the Moriori tree carvings (dendroglyphs). This was the only area we had seen healthy trees with leaves and bird life. Some small fantails entertained us. Then on to our friendly fisherman at Kaingaroa. A welcome cup of tea and another *Alcithoe wilsonae*. Many bags and instructions were left in case he got any more; our excess food handed over and then we were off home.

It was time to clean up and have (for Doreen and me) our first hotel meal of the trip. We decided to try the tourist lodge, a short distance out of Waitangi. After roughing it on the beach all week, it felt odd being waited on in the plush lounge. However, the three course meal however was most welcome and, although we returned home early for once, the bedrooms lights were on even longer as bags were packed and repacked in the effort to get everything in. We had earlier drawn straws and taken it in turn to pick from the shells and other gifts we had acquired during the trip. We all ended up with an *Alcithoe wilsonae*. Next morning several piles of shells from different localities were seen lying on the sand against the sea wall. Even Doreen admitted defeat and left some behind. At the airport despite withholding the shell sand as hand luggage, we were all overweight. Fortunately some nice businessmen on the plane had no heavy luggage and, other than the divers, we were not charged for the excess weight.

All too soon we were up in the air, the low lying land and lagoons disappearing beneath us. The last sight of land was the coastline at Taupeka Point - we shall have to return!

Background to the Chathams - continued from page 2 ...

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CHATHAM ISLANDS TRIP 1994 - DIVING EXPERIENCES

By Don Watson

My son Donald and I sent our diving gear over to the Chathams on a boat called the *Ngamaru* a month before we had to leave ourselves.

We were taken down to Wellington airport by my wife Pat and there met up with John Marston and Alan Sadd, did our ticketting and checked in our luggage. We took our underwater camera with us, a pretty heavy item so our excess baggage cost us $200. They then told us that the flight was going to be an hour later than scheduled but after a cup of tea the time passed quickly enough and we finally boarded the plane for what turned out to be a rather bumpy trip.

When we dropped out of the cloud Chatham Island looked like a big estuary! Val Croon, the hotel owner, was waiting for us. Our luggage really filled up her ute. After we reached the hotel we worked out our sleeping arrangements and then went out to a shed where our diving gear had been put and we made certain it had all arrived safely.

Everything being found correct, Donald and John went for a walk around the Waitangi wharf getting their first feel of the Chatham Islands.

Next day I got up a daylight and went for a walk around Petre Bay in front of our hotel. It was blowing a strong westerly and I collected a *Buccinulum* or two but not much else.

After breakfast we waited around for a phone call to organise a trip out with a fisherman to take us diving. When I rang him in the end he said it was too lumpy at Port Hutt - so that meant that we had to organise our own day. We hired the hotel's four-wheel drive ute, and John and Donald went off in it. I'd caught a bit of the sun already - I couldn't believe how that wind had burnt so badly - so I stayed back at the hotel and slept off the headache.

Next day Donald and I went for a snorkel dive on the reef in front of the hotel. There were hundreds of *Cookia sulcata* back to back. I collected a live *Cabestana spengleri* and a few Chatham *Buccinulum*. We had a large Blue Cod following us about so Donald broke up a kina and I was able to video the cod eating it. I collected a few chitons as well. There were Butterfish around also, and seaweed on the rocks with some golfball sponges. The marine life down in the crevices was quite attractive but the visibility was not so good due to surges of dirty water.

We got a phone call from the fisherman next morning. He said he would take us out for a dive, so we had a light breakfast and prepared ourselves for the day. By the time we had loaded our diving gear into the ute with our underwater camera, tanks and so on, we found there wasn't much room for anything else. We followed the fisherman on his motorbike out to Port Hutt where he invited us to have a coffee and meet his mates. One of them I thought I had seen before somewhere, and I thought he was looking at me in the same way. So I asked him if he has been at Kaikoura at any time. It turned out that he used to launch some of the fishing boats there. I told him we had done some diving there and we then found we had friends in common at Kaikoura - which all goes to show that you can't get away to anywhere even as remote as the Chathams without someone knowing you! Anyway we soon got into our suits and took our gear down to the boat. While we went off on our dive John went down to the rocks to look for shells in the shallows. Our fisherman, Kevin, took us out past Island Reef. The water was pretty clean and calm but with a surge exposing kelp-covered rocks to about two metres.

We prepared the camera housing and went into the water with me being cameraman and Donald the crayfish catcher! When we got to the bottom we were in 30 metres depth, about 80 metres offshore, with the rocks rising up rather more than 3 metres around us and Blue Cod following us everywhere. There were also Wrasses and Mottled Triplefins but not really a great

number of fish. Quite a variety of sponges were there too, golfballs, finger sponges and tubular ones in yellow and orange, and also quite a few different seaweeds, short agar weed, brown, purple, blue and feathery weeds. Large kina were also noted and a nudibranch, cream-coloured with tassles. Kevin said there weren't any *tigris* at Port Hutt and we didn't see any under ledges during our dive. I collected two live *Calliostoma punctulata* and one *Argobuccinum tumidum* but there weren't many shells although quite a few biscuit stars.

After we had climbed back on board Kevin radioed another fisherman saying that he was going to throw his cray pots over not far away and that we were going to have a go at getting one of his pots that had got stuck in about 15 metres of water and about the same distance off the rocks. We told him that we had to wait about twenty minutes first of all to get enough dive time to go back under again. So eventually Donald went down and freed the pot, coming up with a good crayfish. We ended up by collecting six crays, kept two for ourselves and gave Kevin the others. He was certainly pleased to get his pot back. Kevin told the other fisherman it was his turn to make the coffee so he came in although he hadn't finished laying his own pots. Time doesn't seem to matter when you're at the Chathams!

The three of us went off to snorkle at Napper Point next. Donald was our driver again. He drove off the road, down the ridge nearly to Napper Point, turned to the left and there was a beautiful little bay with a beach about 50 metres long and sheltered from the south. We collected quite a few *Haliotis virginea morioria* washed up at the high tide mark so Donald and I got into our wetsuits and said we're going to find some live ones under the flat stones which we could see extending out from about two metres depth. So, when after about an hour of snorkelling we hadn't found any live ones we went down to about six or seven metres but still didn't get any. We were downright disappointed! There were many big paua back to back and heaps of chitons but they are so hard to keep alive when you're diving from daylight to ten o'clock at night. I collected a nice *Buccinulum pertinax; marwicki* form, in about three metres under a flat stone. There was a lot more seaweed, including much green sea lettuce in close, in this bay than at Port Hutt (which was not so open to the weather). We were pretty thirsty and hungry by the time we had finished this dive but we ended up by thinking this would be a place worth coming back to.

Our next dive was at Hanson's Point near Waitangi. We loaded up our diving gear and drove round to the wharf and parked under the hill. While we were getting changed a chap came along and said he was going snorkelling for crays. The motor on his boat wasn't working but he said if he could get it to go he'd take us for a dive - but it wouldn't go! By the time we had got our wetsuits on we were feeling the heat now. We walked about 300 metres round the rocks and the water looked better every minute although a bit soupy-looking, the surge not too bad, but no idea what the depth might be. With the heat it was certainly delightful to get into the water and cool down. The visibility, however, was only a metre or so. The rocks had a few crevices and a few Moki came past. It was a very hard dive in shallow water because with the surge we had to try not to get jammed in or knock our heads on a rock. Donald found a *tigris* alive and a *spengleri* as well as a few good-sized crayfish. I was looking under stones lying between the rocks and found the best-looking *Buccinulum waitangiensis* I've ever seen plus a live *Haliotis virginea morioria*. I was really rapt! - it was the only live one we got on the whole trip. It was in about three metres of water. I also got one live *Argobuccinum tumidum*. In among the crevices the water seemed a lot cleaner and the growth pretty but not enough for the camera. We had a few days of strong westerly weather before our dive and that probably had stirred the bottom up so much. While Donald and I were diving John was collecting along the shore.

When we got back to the ute some young boys came along and they ended up by sharing a coke with us. We showed them a *tigris* and asked if they had seen any around. One of them said he had seen them washed up at Taupeka Point. It quite amazed us that they recognised them and

knew where they were, so I recorded the occasion on our video with each of them holding a crayfish.

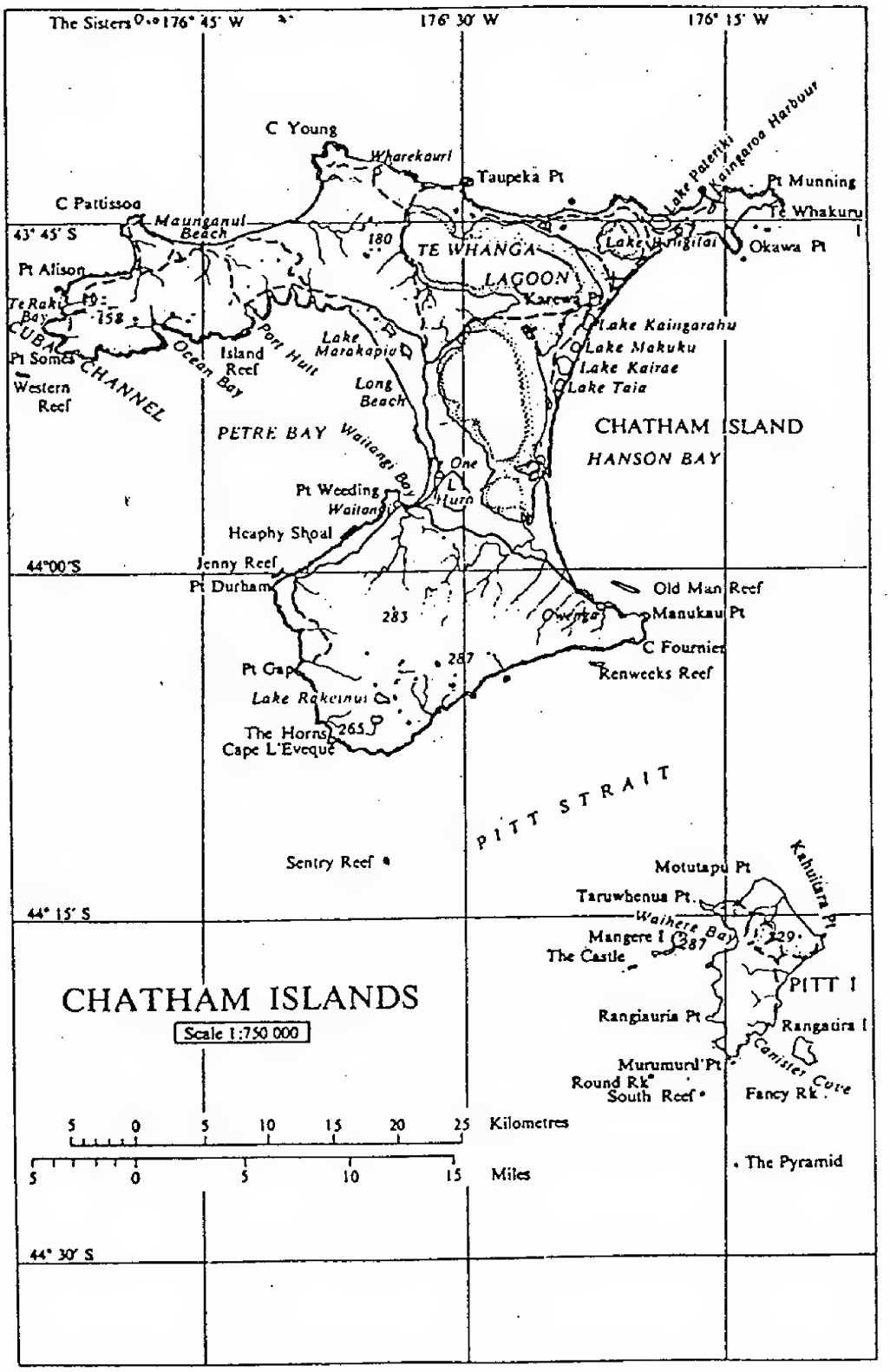
On 30 January, our last day at the Chathams, we did a dive beyond Point Durham. We told Jenny and Doreen that we were going for a dive at 6 a.m. if they wanted to come but, for some reason, they didn't accept our invitation. Anyway, I got up at 5 a.m. and prepared the video camera and its housing. It really takes a while to check everything so that we can rely on it to work once we've descended. John and Donald were awake by then, so we loaded the truck, got into our suits and were all ready to jump in once we got to the water's edge. There was quite a lot of smaller seaweeds where we got in. We swam to about three metres depth, seeing some nice Moki drifting in and out with the surge. I videoed these and then went along a large rock and down to about six metres but the rocks there had only very small amounts of weed on them although lots of Kina. Donald was the crayfish man again and wanted to take quite a few back this time so that Jenny and Doreen could take some home. We went out to about 12 metres or more with plenty of Blue Cod following us, sometimes coming in close enough to try to bite our fingers and nip our suits. Maybe they were only feeling what sort of things we were! We went out to nearly 20 metres but the rocks had a lot of white covering and a dead sort of look. Donald collected a *tigris* there and some shell sand but it wasn't good quality. I saw a creamy-white nudibranch and, after turning over a lot of small stones, collected a few *Buccinulum lineum* but no *waitangiensis*. It would probably have been better if we could have gone out further but we didn't have full tanks when we started so we had to come in.

Later that night it was all go, packing our shells and gear for the trip home next day. I packed a lot of my shells into the 20-litre buckets which I had sent over by the boat and I sent them back the same way although the boat wasn't due to sail until mid-February. The hotel owner kindly arranged for all our gear to go on the boat again and everything was eventually delivered right to our door.

So far as the Chathams weather is concerned you would certainly need no less than ten days there because we got five days in a row of southerly weather - and did it blow!

It was a very enjoyable trip - and a most interesting place, especially if you are a shell collector! One could spend a lot of time just snorkelling in the shallows but to get the weather calm in the time you've got there is quite another thing.

John Marston's comprehensive list of what we collected includes all the species which we found during the dives described here.


The Sisters
176° 45' W
176° 30' W
176° 15' W
C Young
Wharekauri
Taupeka Pt
Lake Paterikl
Kaingaroa Harbour
Pt Munning
Te Whakuru
C Pattisson
Maunganui Beach
43° 45' S
180
TE WHANGA
LAGOON
Lake Hungilai
Okawa Pt
Pt Alison
Te Raki Bay
158
Karewa Pt
Lake Kaingarahu
Lake Makuku
Lake Kairae
Lake Taia
CUBA
Pt Somes
Western Reef
CHANNEL
Ocean Bay
Island Reef
Port Hutt
Lake Marakapia
Long Beach
CHATHAM ISLAND
HANSON BAY
PETRE BAY
Waitangi Bay
Te One
L Huro
Pt Weeding
Waitangi
Heaphy Shoal
44°00'S
Jenny Reef
Pt Durham
Old Man Reef
283
Owenga
Manukau Pt
C Fournier
287
Renwecks Reef
Pt Gap
Lake Rakeinui
The Horns
265
Cape L'Eveque
PITT STRAIT
Sentry Reef
Motutapu Pt
Kahuitara Pt
Taruwhenua Pt
44° 15' S
Waihere Bay
Mangere I
287
329
The Castle
PITT I
CHATHAM ISLANDS
Scale 1:750 000
Rangiauria Pt
Rangaura I
Canister Cove
Murumuru Pt
Round Rk
South Reef
Fancy Rk
5 0 5 10 15 20 25 Kilometres
5 0 5 10 15 Miles
The Pyramid
44° 30' S

THE MOLLUSCS OF THE CHATHAM ISLANDS - 1994

by John Marston

Given the financial expenditure necessary it would appear unlikely that another huge multidisciplinary exploring party to the Chatham Islands is going to supercede the expedition led by G.A. Knox in 1954. Dr R.K. Dell's account of "The Archibenthal Mollusca of New Zealand", Dominion Museum Bulletin November 1956, followed by his "Marine Mollusca" in the Biological Results of the Chatham Islands 1954 Expedition published in 1960 by the NZ Oceanographic Institute, will therefore remain the classical treatises on Chatham Islands marine molluscs.

In our 10 days the five of us were limited to intertidal collecting, a little snorkel or scuba if the sea was favourable, drift lines, and contact with friendly fisherfolk. Our collecting stations, prefixed "W", reflect our limitations but, nevertheless, help to complement the overall picture of the molluscan pattern of the Chatham Islands, as the 1954 expedition concentrated on dredging, both below and above 100 fathoms (=182 metres)*.

From the 1954 expedition station list (Dell, 1960: 142; see also Knox, 1957: table 1 for more detail) the relevant stations in less than 100 fathoms are:

C9 - Glory Bay, Pitt Island, shore; **C11** - Owenga, shore; **C13** - Owenga, 4-6 fm; **C14** - Hanson Bay, 15 fm; **C15** - Hanson Bay, 30 fm; **C16** - Kaingaroa, shore; **C17** - Kaingaroa, hand net at night; **C18** - off Cape Pattison, 15 fm; **C19** - off Cape Young, 25 fm; **C20** - off Cape Young, 30 fm; **C21** - north of French Reef, 15 fm; **C22** - The Sisters, shore; **C23** - north of The Sisters, 33 fm; **C24** - south of The Sisters, 38 fm; **C25** - Waitangi wharf, hand net at night; **C26** - Waitangi, shore; **C27** - Petre Bay, 45 fm; **C28** - Petre Bay, 50 fm; **C29** - Petre Bay, 94 fm; **C30** - Petre Bay, 70 fm; **C31** - Petre Bay, 22 fm; **C32** - Petre Bay, 7 fm; **C33** - Te Whanga Lagoon, 1-2 fm; **C36** - Waihere Bay, hand net at night; **C37** - between South East and Pitt Islands, 30 fm; **C38** - south of Little Mangere Island, 43 fm; **C39** - South East Island, shore; **C42** - Owenga, hand net at night; **C43** - Owenga, 3-4 fm; **C46** - Kaingaroa, 3 fm; **C47** - Kaingaroa, hand net at night; **C49** - Port Hutt, shore.

Some subsquent papers on micromolluscs published by Ponder (1965, 1966) deal with other species found in further sorting of the Chatham Islands 1954 Expedition samples, and they include, as well, some other earlier material (e.g. P1, D3, etc., as listed below).

The records given by Powell (1933: 182) were incorporated by Dell (1960) with station numbers as:

P1 - Waitangi, in shell sand; **P2** - Waitangi, living on or under stones at low tide; **P3** - Waitangi, living on seaweeds; **P4** - Waitangi, cast up on beach; **P5** - off Owenga, 10 fm; **P6** - Owenga; **P7** - Port Hutt, cast up on beach; **P8** - Tioriori, cast up on beach; **P9** - Wharekauri, living on or under stones; **P10** - Wharekauri, in shell sand; **P11** - Kaingaroa, in blue cod stomachs; **P12** - Maunganui, cast up on beach; **P13** - Te Whanga Lagoon; **P14** - Waitangi West; **P15** - generally distributed.

Dell also added some records from the then Dominion Museum (now the Museum of New Zealand Te Papa Tongarewa):

D1 - "Chatham Islands"; **D2** - cod stomachs, Chatham Islands, F. Abernethy; **D3** - Waitangi, W.R.B. Oliver - /12/1909; **D4** - Flower Pot, Pitt Island, C.J. Lindsay, 5/2/1957; **D5** - shore of Te Whanga Lagoon, C.J. Lindsay, 11/2/1957.

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* Following local custom depths and distances are retained in imperial units.

F1 refers to species recorded by Finlay (1928) but by no one else. These records will be discussed later.

For each species on Dell's list the depth range in fathoms at the Chathams is given. Except for the craypots, blue cod cage traps or scallop trawlers we have little precise data for beach specimens.

A capital E on the left indicates a species considered to be endemic to the Chatham Islands. An asterisk indicates a new record for the Chathams in 1994.

Since the 1954 expedition's results appeared in 1960 there have been innumerable name changes reflecting research carried on in many families. Most people now use Powell's "New Zealand Mollusca" 1979, and this revised Chathams checklist now follows the 1979 order of classification instead of that of 1960. To make it easier to follow the changes the page numbers in bold type (e.g. **167**) given on the left margin refer to Powell's 1979 book, except for where I have used a more up to date name as given in "Cenozoic Mollusca of New Zealand by Dr A.G. Beu and Dr P.A. Maxwell, New Zealand Geological Survey Paleontological Bulletin, 1990. Such a reference is indicated by † followed by their page number, e.g. †314. Name changes following Campbell *et al.* (1993) in their bulletin on the Cretaceous-Cenozoic geology of the Chatham Islands are marked by ‡. Similarly, the use of § indicates a name change following Bruce Marshall's 1995 revision of the New Zealand species of *Calliostoma.* Powell's page number using an earlier name is given below such changes but enclosed in square brackets, e.g. [**214**]. A superscript (e.g. 167[12]) indicates a comment to be found in my "Notes".

WELLINGTON SHELL CLUB'S COLLECTING AREAS

W1 - Waitangi, beach drift line, sand, mud, rocks; **W2** - Waitangi, reef snorkelling to 10 feet at low tide; **W3** - Waitangi, rocks and sandy patches, half a mile west of wharf; **W4** - Waitangi, rocks half a mile west per scuba; **W5** - Owenga, wharf and rocky cove nearby; **W6** - Owenga, shellbeds, stream and headland north of Owenga wharf; **W7** - Owenga, papa rocks cast up between wharf and shellbeds; **W8** - Owenga, one mile north beyond shellbeds, sand expanses; **W9** - Port Hutt, beach drift line within harbour; **W10** - Port Hutt, low tide rock pools; **W11** - Port Hutt, scuba to 100 feet; **W12** - Port Hutt, bryozoan material on long lost craypot from 30 fm; **W13** - Cape Pattison, storm level above normal tide lines; **W14** - Cape Pattison, mid tide pools and crevices; **W15** - Cape Pattison, tide drift line; **W16** - Taupeka Point, storm level above normal tide lines; **W17** - Taupeka Point, tide drift lines; **W18** - Taupeka Point rock pools, low tide; **W19** - Taupeka Point, very exposed outer rock faces; **W20** - Matarakau Point, storm level above normal tide lines; **W21** - Matarakau Point, tide drift line; **W22** - Matarakau Point, mid tide pools on reef platform; **W23** - Okawa Point, storm level above normal tide lines; **W24** - Okawa Point, beach drift line; **W25** - Okawa Point, rock pools, low tide; **W26** - Okawa Point, shell sand, mid tide; **W27** - Kaingaroa, tide drift line; **W28** - Kaingaroa, mid tide pools and crevices; **W29** - Kaingaroa, high tide rocks; **W30** - Kaingaroa, scallop trawler off Taupeka Point, 30-50 fm; **W31** - Kaingaroa, fish factory, blue cod stomachs, 30 fm; **W32** - Kaingaroa, craypots, 25 miles to northeast, 30-40 fm; **W33** - Kaingaroa, Point Munning, cray pots, 35 fm; **W34** - Te Whanga Lagoon, Blind Jims Creek; **W35** - Te Whanga Lagoon, Waitaha Creek outlet into lagoon; **W36** - Point Durham; **W37** - Napper Point, Port Hutt; **W38** - Whangamoe Inlet, east of Port Hutt; **W39** - The Forty Fours, craypots, 30-35 fm; **W40** - south Hanson Bay, scallop trawler, 34-35 fm; **W41** - 20 miles east of The Forty Fours, craypot, 70 fm; **W42** - 45 miles north of Kaingaroa, 70 fm; **W43** - Okawa Point, craypots at 30-40 fm, set on Blind Reef, northern end of Hanson Bay; **W44** - Cape Young, craypot, 15 fm; **W45** - Okawa Point, craypot, 18-20 fm; **W46** - Te Wakaru [=Te Whakuru] Point, east of Kaingaroa, craypots, 40-45 fm.

COMPARATIVE LIST OF CHATHAMS MOLLUSC RECORDS

		1994 [Incorporating Wellington Shell Club records, CIE and post 1960 records]	1954 [Chatham Is 1954 Expedition; Dell, 1960]
		AMPHINEURA	
22		*Ischnochiton maorianus* Iredale, 1914 W2 W3 W5 W37	- C11 C26 C49 P13 (0)
24	*	*Callochiton kapitiensis* Mestayer, 1926 W39 W43	-
26		*Plaxiphora* (*P.*) *biramosa* (Q. & G., 1835) W2 W10	*Diaphoroplax biramosa* (Q. & G., 1835) C22 C26 P15 (0)
26		*P.* (*P.*) *caelata schauinslandi* (Thiele, 1909) W10 W18 W19 W26 W27 W34 W37	*Maorichiton schauinslandi* C16 C26 C39 P2 (0)
28[1]		*Chiton pelliserpentis* (Q. & G., 1835) W6 W10 W27. See "Notes".	*Sypharochiton pelliserpentis* C9 C22 C26 C49 D4 P15 (0)
28	*	*Rhyssoplax canaliculata* (Q. & G., 1835) W39	-
29		*Onithochiton n. neglectus* Rochebrune, 1881 W6 W10 W26 W27	- C11 C26 C39 C43 C49 P15 (0-4) = *Icoplax chathamensis* Dell, 1960 C14 C16 C18
[28]		[Powell, 1979 retained this as *Rhyssoplax* (*N.*) *chathamensis* (Dell, 1960)]	
30		*Acanthochitona* (*N.*) *facilis* (Iredale & Hull, 1931) *Fide* Beu, 1977: 53; but not in Powell from the Chathams	
31		*A.* (*N.*) *rubiginosa* (Hutton, 1872) W12	*Craspedochiton rubiginosus* C24 (38)
31		*A.* (*N.*) *violacea* (Q. & G., 1835) W10 W39	*Notoplax violacea* C26 C49 P15 (0)
31		*Cryptoconchus porosus* (Burrow, 1815) -	- C26 P15 (0)

GASTROPODA

34	E	*Scissurella prendreville*i Powell, 1933	-
		-	P5 (0)
34	*	*S. fairchildi* Powell, 1933	-
		W26	
34		*Sinezona laqueus* (Finlay, 1926)	*Schismope laqueus*
			C16 C23 P5 (0-33)
34		*S. brevis* (Hedley, 1904)	-
		W39	P5 (10)
34		*S. levigata* (Iredale, 1908)	*S. laevigata* [*sic*]
			C13 C16 P1 (0-5)
34	E	*S. pauperata* Powell, 1933	-
		W9 W26	P5 (10)
34		*S.* cf. *subantarctica* (Hedley, 1916)	*S.* cf. *antarctica* [*sic*] (Hedley)
			F1
35		*Scissurona rosea* (Hedley, 1904)	-
			C16 P1 (0)
36		*Haliotis iris* Gmelin, 1791	-
		W5 W6 W13 W16 W20 W23 W37	C9 C49 P15 (0)
36		*H. australis* Gmelin, 1791	-
		All stations except Te Whanga Lagoon	C9 C16 D4 P15 (0)
37[2]	E	*H. virginea morioria* Powell, 1938	-
		W1 W6 W12 W15-W17 W20 W21 W23 W24 W27 W31 W37	C11 C14 C16 C18 C26 P15 (0-15)
38		*Incisura lytteltonensis* (E.A. Smith, 1894)	-
		W26	C11 C16 P1 (0)
38[3]		*Montfortula rugosa* (Q. & G., 1834)	*M. chathamensis* Finlay, 1928
		W10 W14 W18 W27 W28 W36	C9 C11 C16 C22 (0)
38		*Emarginula striatula* (Q. & G., 1834)	-
		W3 W5 W6 W9 W15 W26-W28	C14 C16 C23 C24 C28 C31 C38 C49 P14 (0-50)
40		*Tugali suteri suteri* (Thiele, 1916)	-
		W1 W3 W6 W9 W26 W27 W36	C16 C26 C49 P1 (0)
40		*Tugali* cf. *elegans* Gray, 1843	-
		W31	C14 C23 C24 (15-38)
41	E	*Monodilepas skinneri* Finlay, 1928	-
		W6	C11 C14 C16 C38 P6 (0-43)
41	E	*Cellana strigilis chathamensis* (Pilsbry, 1891)	-
		W1 W3 W5 W6 W10 W13-W25 W27-W28 W37	C9 C11 C16 C26 C49 D4 P15 (0)
45		*Radiacmea inconspicua* (Gray, 1843)	-
		W1 W3 W6 W9 W12 W15 W26 W27 W36	C11 C13 C16 C26 C38 C46 P15 (0-43)

48		*Notacmea parviconoidea* (Suter, 1917)	-
		-	P4
51	E	*Margarella fulminata* (Hutton, 1873)	-
		W3 W6 W9 W15 W21 W26 W27 W36 W38	C11 C12 C16 P15 (0)
52		*Herpetopoma bella* (Hutton, 1873)	-
		W3 W 5 W6 W9 W10 W15 W26 W27 W36	C9 C16 C49 P2 (0)
52		*H. larochei alacerrima* Dell, 1956	-
		-	C24 (38)
53		*Melagraphia aethiops* (Gmelin, 1791)	-
		W6 W20 W21	C9 C16 C49 D4 P2 (0)
53		*Diloma nigerrima* (Gmelin, 1791)	*Zediloma digna* Finlay, 1927
		W5 W9 W21 W22 W27 W36	C9 P2
53		*D. arida* (Finlay, 1927)	*Z. arida* Finlay, 1927
		W6 W17 W27	C9 C16 C49 P2 (0)
53	E	*Cantharidus opalus cannoni* Powell, 1933	-
		W1 W3 W6 W9 W12 W13 W15 W17 W21 W24 W27 W36 W38	C11 C16 P15 (0)
56	E	*Micrelenchus caelatus morioria* Powell, 1933	-
		W6 W9 W12 W21 W26 W27	C11 C13 C14 C20 C24 C31 C38 P5 (0-43)
56		*M. dilatatus* (Sowerby, 1870)	-
		W1 W3 W6 W9 W15 W21 W26 W27 W36-W38	C11 C16 C46 C49 P15 (0-3)
57		*M. tenebrosus* (A. Adams, 1853)	*M. tenebrosus tenebrosus* (A. Adams)
		-	F1
			M. tenebrosus huttoni (E.A. Smith, 1876)
			F1
58		*Trochus viridis* Gmelin, 1791	-
		W1 W3 W6 W9 W15 W21 W26 W27 W36-W38	C11 C16 C26 P15 (0)
58		*T. tiaratus* Quoy & Gaimard, 1834	*Trochus huttoni* Cossman, 1918
		-	F1
58	E	*Thoristella c. chathamensis* (Hutton, 1873)	-
		W6 W9 W15 W21 W26 W27 W36-W38	C9 C13 C16 C24 C38 C49 P15 (0-43)
§90 [62]		*Calliostoma* (*M.*) *granti* (Powell, 1931)	*Maurea punctulata ampla* (Powell, 1939) "fide Powell" (Dell, 1960: 145)
[62][7]		W4 W6 W11-W13 W16 W17 W20 W21 W23 W24 W33 W39	*M. punctulata stewartiana* (Oliver, 1926) C11 C14 C26 C29 P6 (0-94)

§112 [62][4]	*C.* (*M.*) *waikanae* Oliver, 1926 W30 W31 W33	*M. pellucida morioria* Powell, 1946 C30 (0-70)
§108 [61][5]	*C.* (*M.*) *selectum* (Dillwyn, 1817) W30	*M. cunninghami pagoda* (Oliver, 1926) F1
§84 [61][6]	*C.* (*M.*) *tigris* (Gmelin, 1791) W1 W4 W6 W16 W17 W20 W23 W24 W30 W33 W39	*M. tigris chathamensis* (Dell, 1950) C11 C49 (0)
†404 [65]	*Zethalia zelandica* (H. & J., 1854) -	*Zethalia zelandica* (A. Adams, 1855) F1
65	*Antisolarium egenum* (Gould, 1849) W6 W26	- C11 C13 C20 C21 C28 C29 C31 C32 C38 P5 (0-94)
‡160 †404 [66]	*Turbo* (*Modelia*) *granosa* (Martyn, 1784) W6 W13 W15-W17 W20 W23 W24 W33	*Modelia granosa* (Martyn, 1784) C11 C14 C16 C18 C26 C43 C49 D4 P15 (0-15)
66	*Astraea heliotropium* (Martyn, 1784) W6 W13 W15-W17 W23 W24 W30 W33	- C18 C24 P6 (0-38)
66	*Cookia sulcata* (Gmelin, 1791) All stations except Te Whanga Lagoon	- C16 D4 P15 (0)
†404 [67]	*Argalista fluctuata* (Hutton, 1883) -	C11 C23 C24 C38 P1 (0-38)
69	*Munditia owengaensis* Powell, 1933 W 12 W26	*Cyclostrema owengaensis* (Powell, 1933) C13 P5 (5-10)
70	*Cirsonella densilirata* Suter, 1908 W26	- C23 C24 (33-38)
71 *	*C.* cf. *variecostata* Powell, 1940 W12	-
72	*Lodderia eumorpha cookiana* (Dell, 1952) -	- C23 (33)
73	*Crosseola* (*D.*) *vesca* (Finlay, 1926) -	*Dolicrossea vesca* (Finlay, 1927) C16 C32 P1 (0-7)
74	*Elachorbis subtatei* (Suter, 1907) -	- C13 C28 (4-50)
76	*Notosetia neozelanica* (Suter, 1898) W39	- C20 C23 C38 P1 (0-43)
77	*Brookula* (*A.*) *finlayi* Powell, 1933 -	- C16 P5 (0-10)
77	*Liotella polypleura* (Hedley, 1904) W26	- C11 C16 P1 (0)
79	*Zalipais lissa* (Suter, 1908) -	- P1 (0)

†405 [87]	*Nodilittorina* (*A.*) *cincta* (Q. & G., 1833) W3 W5 W6 W22 W28	*Melarhaphe cincta* (Q. & G., 1833) C9 C22 D3 P15 (0)
†405 [87]	*N.* (*A.*) *unifasciata antipodum* (Philippi, 1847) W1 W22 W28	*M. oliveri* Finlay, 1930 C9 C16 C26 C49 P15
88	*Macquariella aucklandica* Powell, 1933 -	- C11 C13 C16 C32 C38 P1 (0-43)
88	*Risellopsis varia* (Hutton, 1873) W21 W26 W36	- C9 C12 C13 C16 C22 C26 C38 P15 (0-43)
88	*Eatoniella kerguelensis chiltoni* (Suter, 1909) -	Recorded in Powell, 1979: 89, from Ponder, 1965a: 53-54 C13 C16 C49 D3, Tioriori
89	*E.* (*A.*) *lutea* (Suter, 1908) -	- C49, Ponder 1965a: 57 - needs confirmation
90	*E.* (*Abscindostoma*) *albocolumella* Ponder, 1965 -	No locality - Ponder, 1965a: 58-59
90	*E.* (*Albosabula*) *lampra* (Suter, 1908) -	*Notosetia lampra* (Suter, 1908) P5 (10); see also Ponder, 1965a: 61-62
91	*E.* (*Dardaniopsis*?) *atervisceralis* Ponder, 1965 -	- C16 D3, Ponder 1965a: 75
91	*E.* (*D.*) *notolabia* Ponder, 1965 -	- D3 and Red Bluff 1909, Ponder, 1965a: 70
91	*E.* (*D.*) *pullmitra* Ponder, 1965 -	- D3 and Red Bluff 1909, Ponder, 1965a: 72
92	*E.* (*D.*) *varicolor* Ponder, 1965 -	- C49, Ponder, 1965a: 73 - needs confirmation
92	*E.* (*D.*) *dilatata* (Powell, 1955) -	- D3 and Red Bluff 1909, Ponder, 1965a: 79
92	*E.* (*D.*) *limbata* (Hutton, 1883) -	*Dardanula limbata* (Hutton, 1883) C49 P1 (0); see also Ponder, 1965a: 83
92	*E.* (*D.*) *minutocrassa* Ponder, 1965 -	- C49, Ponder, 1965a: 84-85
92	*E.* (*D.*) *mortoni* Ponder, 1965 -	- D3 , Red Bluff, Tiorori, Ponder, 1965a: 85
92	*E.* (*D.*) *olivacea* (Hutton, 1882) W26	*Dardanula olivacea* (Hutton, 1882) C11 C13 C16 C32 C38 C49 P2 (0-43); D3, Tioriori - Ponder, 1965a: 76
93	*E.* (*D.*) *roseola* (Iredale, 1915) -	*D. roseola* (Iredale, 1915) C23 C38 C49 P5 (0-43); see also Ponder, 1965a: 89

93	*E.* (*D.*) *smithi* Ponder, 1965 -	- C13 C32 C38, Ponder, 1965a: 90-91
93	*E.* (*D.*) *verecunda* (Suter, 1908) -	*Notosetia verecunda* (Suter, 1908) P1 (0), but not listed by Powell, 1979
94 *	*Pupatonia* cf. *atoma* Ponder, 1965 W26	- C11 P3 (0),
94	*P. gracilispira* (Powell, 1933) -	*Estea gracilispira* Powell, 1933 C16 C23 P5 (0-3), Ponder, 1965a: 97
94	*Skenella pfefferi* Suter, 1909 W26	- C11 P3 (0); see also Ponder, 1965a: 97
†380 [95]	*Pusillina* (*Haurakia*) *hamiltoni* (Suter, 1898) -	*Haurakia hamiltoni* (Suter, 1898) C16 C32 P1 (0-43)
[95]	*P.* (*H.*) *infecta* (Suter, 1908) W12	*Notosetia infecta* (Suter, 1908) C16 C38 P1 (0-43)
†378 [97]	*Alvania* (*L.*) *maclurgi* (Powell, 1933) -	*Linemera maclurgi* Powell, 1933 C20 C23 C38 P5 (10-43)
100	*Rissopsis* (*Peringiella*) *lubrica* (Suter, 1898) -	*Notosetia lubrica* (Suter, 1898) P5 (10), but not in Powell, 1979: 100
†380 [101]	*Pisinna impressa* (Hutton, 1885 -	*Estea impressa* (Hutton, 1885) C38 P5 (10-43); see also Ponder, 1965c: 138
[101]	*P. insulana porrecta* (Powell, 1933) -	*E. porrecta* Powell, 1937 C13 C15 C20 C23 C38 P1 (0-43); see also Ponder, 1965c; 139 *E.* cf. *insulana* Marwick, 1928 P5 ; see Ponder, 1965c: 139
[102]E	*P. micronema morioria* (Powell, 1933) -	*E. morioria* Powell, 1933 P5 (10), see Pomder, 1965c: 142-143
[102]	*P. minor* (Suter, 1898) -	*Estea minor* (Suter, 1898) C16 C38 C49 P2 (0-43), and D3, see Ponder, 1965c: 143
[102]	*P. r. rekohuana* (Powell, 1933) -	*E. rekohuana* Powell, 1933 C13 C16 C32 C38 C49 P2 (0- 43), and D3, see Ponder, 1965c: 147
[102]	*P. s. subfusca* (Hutton, 1873) -	*E. guesti* Powell, 1933 C13 C16 C32 C38 C49 P1 (0-43), and D3, see Ponder, 1965c: 155
105	*Anabathron* (*S.*) *hedleyi* (Suter, 1908) -	*Scrobs hedleyi* (Suter, 1908) C16 C49 P2 (0)
106	*Rissoina chathamensis* (Hutton, 1873) W3 W6 W9 W10 W15 W21 W26 W27 W36-W38	- C9 C11 C16 C38 C49 P1 (0-43)
107 E	*Fictonoba carnosa martini* (Finlay, 1928)	*Austronoba martini* Finlay, 1928 C11 C13 C16 C32 C38 C49 P2 (0-43)

109	*Merelina maoriana* Powell, 1939 W26	- C13 C16 C31 C32 C38 P1 (0-43)
108	*M. foliata* (Suter, 1908) W12	*Anabathron foliatum* (Suter, 1908) C16 P5 (0-10)
109	*M. plaga* (Finlay, 1926) W12	- P 1; recorded by Finlay, 1928: 141, Powell, 1933: 185, not by Dell, 1960 or Powell, 1979
109 E	*M. waitangiensis* Powell, 1933 W26	- P1 (0)
112	*Subonoba fumata* (Suter, 1898) -	- C16 P1 (0)
112 E	*S. inornata* Powell, 1933 -	- C16 P2 (0)
121	*S. morioria* Powell, 1933 -	- C13 C16 P1 (0-6)
112	*S.* cf. *paucicostata* Powell, 1931 -	- P1 (0)
116 E	*Eatonina* (*S.*) *atomaria* (Powell, 1933) -	*Notosetia atomaria* Powell, 1933 C38 P1 (0-43); also Ponder, 1965b: 122
117 E	*Tubbreva exaltata exaltata* (Powell, 1933) -	*N. exaltata* Powell, 1933 C24 P5 (10-38); and C23, D3, and Red Bluff 6/12/1909, see Ponder, 1965b: 127
118	*Orbitestella hinemoa* Mestayer, 1919 W12	- P1 (0)
118	*O. toreuma* Powell, 1930 W26	- C16 C23 P1 (0-33)
119	*Rissoella elongatospira* Ponder, 1966	- C49 D3, see Ponder, 1966: 168
120	*R.* (*J.*) *rissoaformis* (Powell, 1939) -	*Zelaxitas fiordlandica* Fleming, 1948 C16 (0); not listed from Chathams by Ponder, 1966: 168 or by Powell, 1979: 120
120	*R.* (*Z.*) *cystophora* (Finlay, 1924) -	*Z. cystophora* (Finlay, 1924) C11 (0) + D3 (Ponder, 1966: 170)
120	*Rissoella* (*Z.*) *micra* (Finlay, 1924) -	*Zelaxitas micra* (Finlay, 1924) C11 C16 P1 (0)
120	*R.* (?) *flemingi* Ponder, 1968 -	Kaingaroa [=C16], see Ponder, 1968: 121
120	*Omalogyra fusca* Suter, 1908 W26	- C11 (0)
125	*Maoricolpus r. roseus* (Q. & G., 1834) W1 W6 W9 W15 W17 W21 W24 W27	- C11 C14 C16 C23 C49 P15 (0-33)
127 E	*Zeacolpus* (*S.*) *knoxi* Marwick, 1957 W6 W12	- C15 C20 C28 C29 (20-94)

128	*Caecum digitulum* Hedley, 1904	-
	W26	C16 P2 (0)
128	*Serpulorbis zelandicus* (Q. & G., 1834)	-
	W6	C49 P4 (0)
129	*Novastoa lamellosa*	-
	W3 W13 W15 W16 W20	C16 C49 P4 (0)
130	*Siliquaria weldii* Tenison Woods, 1876	*Pyxipoma weldii* (Tenison Woods, 1876)
	W12 W26	F1 (0)
131	*Zeacumantus subcarinatus* (Sowerby, 1855)	-
	W1 W3 W6 W9 W15 W26 W27 W36	C11 C16 C49 P15 (0)
134	*Alipta crenistria* (Suter, 1907)	-
	-	C37 (30)
136	*Seila* (*Lyroseila*) *chathamensis* Suter, 1908	*Lyroseila chathamensis* (Suter, 1908)
	W21 W26 W27 W36	C16 C23 C49 P1 (0-33)
137	*Brooksena succincta* (Suter, 1908)	-
	W39	C16 (0)
137	*Larochella alta* Powell, 1927	-
	W12	C16 P5 (0-10)
137 *	*L.* cf. *toreuma* Powell, 1927	-
	W12	
†328	*Melanella aucklandica* (Suter, 1909)	*Balcis archeyi* (Finlay, 1928)
[139]	-	C13 C16 P1 (0-6)
146	*Malluvium calcareus* (Suter, 1909)	*Capulus calcareus* Suter, 1909
	-	C29 (94)
146	*Neojanacus perplexus* Suter, 1907	-
	-	C15 C28 C29 (30-94)
147	*Trichosirius i. inornatus* (Hutton, 1873)	*T. inornatus chathamensis* Finlay, 1928
	W26 W36	C15 P1 D1 (0-30)
148	*Sigapatella novaezelandiae* (Lesson, 1831)	-
	W1 W3 W6 W15 W27 W36	C13 C16 C31 C38 C49 P15 (0-43)
148 E?	*Zegalerus crater* Finlay, 1926	-
	-	F1; possible derived fossil - see Powell, 1979: 148.
149	*Zegalerus tenuis* (Gray, 1867)	-
	-	C28 C29 (50-94)
150 *	*Lamellaria cerebroides* Hutton, 1883	-
	W6	
152	*Trivia merces* (Iredale, 1924)	*Ellatrivia memorata* Finlay, 1927
	-	F1
154	*Tanea zelandica* (Q. & G., 1832)	-
	W1 W6 W17 W24 W26 W27 W30 W33	C11 C14 C28-C31 C38 C49 P6 (0-94)

156	*Uberella vitrea* (Hutton, 1873) W6	- C12 C15 C20 C23 C28 C29 C32 P1 (0-94)
†353 **[159]**[8]	*Semicassis p. pyrum* (Lamarck, 1822) W17	*Xenophalium* (*Xenogalea*) *powelli* Fin., 1928 P10 (0)
- [160]	*S. pyrum stadialis* (Hedley, 1914) W30, W32 W33	*X.* (*X.*) *finlayi* Powell, 1927 C29 (94)
164[9]	*Cabestana spengleri* (Perry, 1811) W2 W6 W13 W16 W17 W20 W23 W24 W33	- C11 D1 P4 (0)
†354 **[164]**[10]	*C. tabulata* (Menke, 1843) W6 W23	*C. waterhousei segregata* Powell, 1933 P6 (0)
†410 **[166]**[11]	*Argobuccinum pustulosum tumidum* (Dunker, 1862) W6 W13 W16 W17 W20 W21 W23 W24 W30 W33 W37 W39 W40	*A. tumidum* (Dunker, 1862) C11 C23 C24 D1 P6 (0-38)
167[12]*	*Ranella australasia blacki* (Powell, 1954) W30	-
†410 **[167]**[13]	*Fusitriton magellanicus laudandus* Finlay, 1926 W5 W29 W43	*F. laudandus* Finlay, 1927 C29 (94)
168[14]*	*Charonia lampas capax* Finlay, 1926 W6 W16 W30 W33 W41	-
168[15]	*C. lampas rubicunda* (Perry, 1811) Re-instated *pro. tem.*	-
170	*Poirieria zelandica* (Q. & G., 1833) W6 W30	- C28 C30 P6 (0-70)
174	*Xymene ambiguus* (Philippi, 1844) W6 W30 W33	*Zeatrophon ambiguus* (Philippi, 1844) C11 C24 C49 P6 (0-48)
	X. mutabilis (Marwick, 1928) W6 (beach, derived fossil. See "Comments"; incl. by Ponder, 1972 in *X. ambiguus*,	*Z. mutabilis* Marwick, 1928 but separately by Campbell *et al*, 1993
174	*X. mortenseni caudatinus* (Finlay, 1930) W33	*Z. caudatinus* Finlay, 1930 C28 C29 (50-94)
173	*X. plebeius* (Hutton, 1873) W6	*X. plebejus* (Hutton, 1873) F1
175	*X. traversi* (Hutton, 1873) W1 W3 W5 W6 W9 W15 W26 W27 W36 W37	*Xymene traversi traversi* (Hutton, 1873) C11 C14 C16 C26 C38 C 49 P15 (0-43)
177	*Terefundus* (*M.*) *crassiliratus* (Suter, 1908) -	- C16 C20 (0-20)
179	*Thais orbita* (Gmelin, 1791) W6 W16 W23 W24	*Neothais scalaris* (Menke, 1829) P6 (0)

180	*Lepsiella s. scobina* (Q. & G., 1833) W6 W14 W15 W17 W36	-	C9 C16 P6 (0)
180	*L. s. albomarginata* (Deshayes, 1939) W22	-	C11 C26 (0)
180	*Haustrum haustorium* (Gmelin, 1791) W6 W13 W16 W17 W20 W21 W23 W24 W26. W27	-	C9 C16 C26 C49 D4 P2 (0)
180	*Lepsithais lacunosus* (Bruguière, 1789) W6 W16 W17 W20 W21 W23 W24	*L. squamatus* (Hutton, 1878) C11 C16 C22 C26 P6 (0)	
183 E	*Paxula allani* Finlay, 1928 W15 W21 W26 W36	-	C16 C19 P15 (0)
184	*P. s. subantarctica* (Suter, 1908) W15 W26	-	P15
185 E	*Zemitrella finlayi* Powell, 1933 W15 W26	-	C13 C16 C23 C32 C49 P1 (0-33)
188	*Macrozafra subabnormis* (Suter, 1899) [*saxatilis* form - see Powell, 1979: 188]	*M. subnormis saxatilis* (Murdoch, 1905) C49 P1 (0)	
188 *	*M.* cf. *nodicincta* (Suter, 1899) W6	-	
189 E	*Liratilia conquisita chathamensis* Dell, 1956 -	-	C23 C24 (33-38)
192	*Cominella* (*C.*) *adspersa* (Bruguière, 1789) W1 W2 W6	*C.* (*Acominia*) *adspersa* (Bruguière, 1789) C11 C43 C49 P15 (0-4)	
192	*C.* (*C.*) *maculosa* (Martyn, 1784) W6 W23 W24 W33		C9 C11 C16 C26 C49 P15 (0)
193	*C.* (*Josepha*) *glandiformis* (Reeve, 1847) W6	*C.* (*Cominista*) *glandiformis* (Reeve, 1847) C33 P6 (0)	
195 E	*C.* (*Eucominia*) *nassoides iredalei* (Finlay, 1928) W6 W9 W16 W17 W23 W24 W29 W30 W33 W39 W40 W43-W46	*C.* (*E.*) *iredalei* (Finlay, 1928) C11 C14 P6 (0-15)	
E	*C.* (*E.*) *nassoides ellisoni* Marwick, 1928 W6 (derived beach fossil. See "Comments")	*C.* (*E.*) *ellisoni consobrina* Powell, 1933 P6 (0)	
195	*C.* (*E.*) *mirabilis cantuarensis* (Dell, 1951) -	*Far mirabilis nuptialis* Dell, 1953 C29 (94)	
‡160 [**197**]	*Austrofusus glans* [forma] (Röding, 1798) W6 W16	*A. glans* (Bolten, 1798) C11 C28-C31 C38 (0-94)	
‡160 [**197**]	*Austrofusus glans* [forma] *chathamensis* Finlay, 1928 W6 W16 W17 W20 W21 W23 W24 W30 W33 W39 W40	- C11 C49 P6 (0)	
198	*Buccinulum l. lineum* (Martyn, 1784) W10 W17 W21	*C.* (*Evarnula*) *characteristica* (Finlay, 1928) C11 C14 C16 P15 (0-15)	
	[*B. l. lineum* (Martyn, 1784)] W2 W4 W10 W21 W38	*B. waitangiensis* Powell, 1933 C9 C11 C26 C49 P1 (0)	

198 E	*B. l. flexicostatum* Dell, 1956 W39	- C29; type locality Petre Bay 94 fm but not in Dell 1960 list, see Dell, 1956b: 102.
198	*B. pallidum pallidum* Finlay, 1928 W6 W17	- C49
198	*B. pertinax pertinax* (Martens, 1878) W6 W11	*B.* (*Evarnula*) *marwicki* (Finlay, 1928) C16 C26 P15 (0)
199 E	*B. vittatum bicinctum* (Hutton, 1873) W10 W17 W21	*B.* (*Euthrena*) *bicincta* (Hutton, 1873) C9 C11 C14 C16 C26 C49 P15 (0-15)
201 E	*Penion chathamensis* Powell, 1938 W30	- "Kaingaroa" (Dell, 1960: 147, after Powell)
209	*Alcithoe wilsonae* (Powell, 1933) W6 W16 W32 (See "Notes")	*Pachymelon* (*Palomelon*) *wilsonae* Powell P6 (0)
*	and W6 as derived beach fossils (Nukumaruan)	
214	*Volutomitra banski* (Dell, 1951) -	*Proximitra banksi* Dell, 1951 C29 (94)
216	*Austromitra rubiginosa* (Hutton, 1873) W6 W9 W15 W21 W26 W36	- C11 C14 C16 C49 P15 (0-15)
218	*Marginella* (*H.*) *albescens* Hutton, 1873 -	*M.* (*Volvarina*) *albescens* Hutton, 1873 C23 C24 (33-38)
222	*M.* (*Volvarinella*) *cairoma* Brookes, 1924 W21	*M.* (*V.*) *aoteana* Powell, 1932 C23 P2 (0-33)
	-	*M.* (*V.*) *cairoma* Brookes, 1924 C16 C32 P2 (0-7)
220	*M.* (*Sinuginella*) *pygmaea* Sowerby, 1846 -	*M.* (*Glabella*) *pygmaea* Sowerby, 1846 P1 (0)
225 *	*Oamaruia* (*Zeadmete*) cf. *trailli* (Hutton, 1873) W33	-
234	*Phenatoma rosea* (Q. & G., 1833) -	*P. novaezelandiae* (Reeve, 1843) C28 (50)
†420 [238]	*Neogyraleus sinclairi* (E.A. Smith, 1884) -	*N. sinclairi* (Gillies, 1882) P1
238	*N. murdochi* (Finlay, 1924) W6 W9 W15 W21 W26 W36	- C16 C49 (0)
240	*Antigyraleus otagoensis* Powell, 1942 -	- C29 (94)
241	*Liracraea o. odhneri* Powell, 1942 -	- C49 (0)
241	*L. otakaurica* Powell, 1942 W26	- C28 (50)

252	*Cirsotrema forresti* Dell, 1956	
	-	C29 (94)
254	*Janthina janthina* (Linnaeus, 1758)	
	-	D1 (0)
254	*Janthina exigua* Lamarck, 1822	
	-	D1 P1 (0)
256	*Teretriphora huttoni* (Suter, 1908)	*Notosinister* (*T.*) *huttoni* (Suter, 1908)
	W40	P5 (10)
256	*Turbonilla* (*T.*) *moorei* Laws, 1937	
	-	C28 C29 (50-94)
258	*T.* (*Chemnitzia*) *campbellica* Odhner, 1924	*Chemnitzia campbellica* Odhner, 1924
	-	C16 C20 C49 (0-20)
259	*T.* (*C.*) *mitis* (Laws, 1937)	*Chemnitzia mitis* Laws, 1937
	-	P5 (Laws, 1937) = *C.* n. sp. of Powell, 1933: 186, 204
258 E	*T.* (*C.*) *owenga* (Laws, 1937)	*Chemnitzia owenga* Laws, 1937
	W39	C31 (0-22)
259	*T.* (*Striarcana*) *cryptolira* (Laws, 1937)	*Striarcana cryptolira* Laws, 1937
	-	C13 C16 D1 (0)
260	*Graphis blanda* (Finlay, 1924)	
	-	P5 (10)
263	*Odostomia cryptodon* Suter, 1908	
	-	Recorded by Laws, 1939: 206, as "a worn shell"
263	*O. incidata* Suter, 1908	
	-	C11 C15 C28 C29 (0-94)
264	*O. vaga* Laws, 1939	
	-	C11 C16 (0)
264	*Gumina dolichostoma* (Suter, 1908)	
		C13 C20 C23 (4-33)
265	*Agatha georgiana* (Hutton, 1885)	
	-	C29 (94)
265	*Evalea sabulosa* (Suter, 1908)	
	W12	P1; but not in Dell, 1960 or Powell, 1979
265	*Linopyrga rugata rugata* (Hutton, 1886)	
	-	C11 C13 C16 C28 C38 (0-50)
266 E	*Besla waitangiensis* Laws, 1941	
	-	C16 (0)
267 E	*Siogamaia morioria* Laws, 1941	
	-	C13 C49 (0-6)
272	*Philine constricta* Murdoch & Suter, 1906	
	-	C29 P5 (10-94)

276	*Retusa oruaensis* (Webster, 1908)	-
	-	C13 C16 C23 C28 C38 P1 (0-50)
277	*Cylichnina striata* (Hutton, 1878)	-
	-	C16 C20 C32 P1 (0-20)
278	*Cavolinia telemus* (Linnaeus, 1758)	*Cavolina* [*sic*] *telemus* (Linnaeus, 1758)
	-	C30 (70)
280	*Aplysia nigra brunnea* Hutton, 1875	*A. brunnea* Hutton, 1875
	-	F1
282	*Bouvieria aurantiaca* (Risso, 1818)	-
	-	Suter, 1913: 552 from Bergh, 1900 :210-211; listed by Powell, 1933:186; not from P2 as in Dell, 1960: 147
282	*B. ornata* (Cheeseman, 1878)	-
	-	P6 (0)
284	*Archidoris wellingtonensis* (Abraham, 1877)	-
	W18	Recorded by Dell, 1960: 148 (field identification) but not listed from Chathams by Suter, 1913: 563 or Powell, 1979: 284; Bergh, 1900: 220-221, fig. 73, Chatham Islands as *Archidoris* sp.
284	*Ctenodoris flabellifera* (Cheeseman, 1881)	-
	-	P2 (0)
285	*Rostanga rubicunda* (Cheeseman, 1881)	-
	-	P2 (0)
285	*Glossodoris aureomarginata* (Cheeseman, 1881)	-
	-	Recorded by Dell, 1960: 148 (field identification) but not listed by Powell, 1979: 285)
289	*Fiona pinnata* (Eschscholtz, 1831)	-
	-	Recorded by Suter, 1913: 587 from Bergh, 1900: 239; noted by Dell, 1960: 147 but not in Powell, 1979: 289; see also Willan, 1980a: 142
291	*Onchidella nigricans* (Quoy & Gaimard, 1832)	-
	-	P2 (0)
291	*Gadinalea conica* (Angus, 1867)	*Gadinalea nivea* Hutton, 1878
	W3 W6 W20 W26 W27	C9 C11 C16 C26 C39 P2 (0)
292	*Siphonaria australis* Quoy & Gaimard, 1833)	-
	W9 W10 W14 W26-W28	C16 *S. zelandica* Q. & G., 1833. Despite its name, this is only found in Australia; hence the Dell, 1960 references apply to *S. australis*, i.e. C9 C16 C22 C26 C39 C49 P15 (0)

-	*Siphonaria propria* Jenkins, 1983	*S. cookiana* Suter, 1909
[292]	W9 W10 W14 W26-W28	C16 C49 P15 (0)
294	*Marinula filholi* Hutton, 1878	*M. chathamensis* Finlay, 1928
	W6 W9 W15 W27 W36	C9 C49 P1 (0)
295	*Leuconopsis obsoleta* (Hutton, 1878)	-
	-	C9 C11 C16 P2 (0)

SCAPHOPODA

354	*Antalis suteri* Emerson, 1954	*Dentalium* (*A.*) *suteri* Emerson, 1954
	-	C15 C28-C31 C38 (22-94); see also Dell, 1957a: 574
†424	*Fissidentalium zelandicum* (Sowerby, 1860)	-
[354]	W30	C28-C30 (50-94); see also Dell, 1957a: 566

BIVALVIA

355	*Nucula dunedinensis* Finlay, 1928	-
	-	P1 (0)
†312	*N. hartvigiana* Dohrn, 1864	*N. hartvigiana* Pfeiffer, 1864
[356]	-	C49 P1 (0)
356	*N. nitidula* A. Adams, 1856	-
	-	C23 C24 C28 C31 C38 (0-50)
359	*Saccella bellula* (A. Adams, 1856)	*Nuculana* (*S.*) *bellula* (A. Adams, 1856)
	-	C28 C29 C31 C38 (22-94)
356	*N. nitidula* A. Adams, 1856	-
	-	C23 C24 C28 C31 C38 (0-50)
359	*Saccella bellula* (A. Adams, 1856)	*Nuculana* (*S.*) *bellula* (A. Adams, 1856)
	-	C28 C29 C31 C38 (22-94)
362	*Neilo australis* (Quoy & Gaimard, 1835)	-
	W30 W31 [and Marshall, 1978: 426; NZ Oceanographic Inst. Stn D880, 78m]	
363	*Solemya parkinsoni* E.A. Smith, 1874	*S.* (*Zesolemya*) *parkinsoni* E.A. Smith
	W27	C28 C29 C46 (3-94)

364	*Barbatia novaezealandiae* (E.A. Smith, 1915) W6 W23 W24	*B. novaezelandiae* [*sic*] C14 C23 C24 C31 C38 C49 P6 (0-43)
365	*Acar sandersonae* Powell, 1933 W6 W26	- C23 C38 P1 ((0-43)
364	*Acar sociella* (Brookes, 1926) W12 W26	- C9 (0)
†394 [**365**]	*Tucetona laticostata* (Q. & G., 1835) W6 W33 W39	*Glycymeris* (*Grandaxinea*) *laticostata* C11 C20 C23 C24 P6 (0-38)
366	*Glycymeris modesta* (Angas, 1879) W17	- P5 (10)
367	*Philobrya meleagrina* (Bernard, 1896) -	*Hochstetteria meleagrina* Bernard, 1896 C23 C24 (33-38)
367	*P. modiolus* Suter, 1913 -	*H. modiolus* (Suter, 1913) C16 (0)
369	*Lissarca harrisonae* Powell, 1927 -	*Austrosarepta harrisonae* (Powell, 1937) C16 C49 P5 (0-10)
370	*Cosa costata* (Bernard, 1896) W39	- P1 (0)
370	*C. filholi* (Bernard, 1897)	- C23 P5 (0-33)
371	*Verticipronus mytilus* Hedley, 1904 -	- C16 (0)
372	*Mytilus edulis aoteanus* Powell, 1958 W34	*M. aoteanus* Powell, 1958 C11 C 38 D5 P6 (0-43)
372 *	*Perna canaliculus* (Gmelin, 1791) W1 W33 (pers. comm. See "Comments")	-
372	*Aulacomya ater maoriana* (Iredale, 1915) All stations except Te Whanga Lagoon	*A. maoriana* (Iredale, 1915) C9 C11 C13 C16 C22 C38 C39 C49 P2 (0-43)
373	*Modiolus areolatus* Gould, 1850 W5 W6 W13 W16 W17 W23 W24	*Volsella areolatus* (Gould, 1850) C14 C18 C23 C31 P4 (15-33)
373	*Xenostrobus securis* (Lamarck, 1819) -	*V. fluviatilis* (Hutton, 1878) D5 P13 (0)
†395 [**373**]	*Trichomusculus barbata* (Reeve, 1858) W26	- C9 C16 C18 C24 C28 P1 (0-50)
374	*Modiolarca impacta* (Hermann, 1782) W6 W21 W24 W33	*Musculus impactus* (Hermann, 1782) C14 C18 C31 P4 (15-22)
374 *	*Dacrydium pelseneeri* Hedley, 1906 W26	-
†395* [**375**]	*Atrina pectinata zelandica* (Gray, 1835) W6 W17 W40 (live)	-

-	*Tiostrea chilensis* (Philippi, 1845)	{ *Ostrea sinuata sinuata* Lamarck, 1819
[375]	W1 W6 W30 W40	{C26 P6 (0)
		{ *Ostrea sinuata charlottae* Finlay, 1928
		{C23 C24 (33-38)
376	*Crassostrea glomerata* (Gould, 1850)	*Saxostrea glomerata* (Gould, 1850)
	-	C49 (0), Port Hutt only - ?introduced
376	*C. gigas* (Thunberg, 1793)	-
	No sign of this as yet	
‡160	*Pecten novaezelandiae* [forma] *rakiura* Fleming, 1951	*P. n. rakiura* Fleming, 1951
[377]	W6 W30 W31 W40	C20 P6 (0-20)
377	*Mesopeplum convexum* (Q. & G., 1835)	*Pallium* (*M.*) *convexum* (Q. & G.)
	W6 W17 W30 W31 W40	C15 C24 D1 P11 (30-38)
378	*Chlamys dichroa* (Suter, 1909)	-
	W32	D1 P11 (0)
‡160	*C. zelandiae* [forma] *dieffenbachi* (Reeve, 1853)	*C. celator* Finlay, 1928
†338	W1 W3 W6 W13 W16 W17	C14 C23 C24 D1 P6 (0-70)
[378]	W24 W30 W31	
†338	*C. zelandiae* (Gray, 1843)	{ *C. suprasilis* Finlay, 1928
[379]		{D1 P6 (0)
†338	-	{ *C. zeelandona* (Hertlein, 1931)
[378]		{C23 (33)
378	*C. gemmulata* (Reeve, 1853)	*C. g. radiata* Hutton, 1873
	W6 W8 W13 W15-W17	C14 C23 C24 C31 D1 P6 (0-70)
	W20 W21 W23 W24 W30 W31 W40	
†395	*Cyclochlamys transenna* (Suter, 1913)	*Cyclopecten transennus* (Suter, 1913)
[380]	W26	C16 (0) -
†180	*Lima zealandica* Sowerby, 1876	
[381]	W12 W42 (live)	C23 (33) -
382	*Limatula maoria* Finlay, 1926	
	W31 W33	C14 C16 C20 C23 C24 C28 C29 C38
		D1 D2 (0-94)
382	*Escalima regularis* Powell, 1955	
		C29 (94) -
†396	*Pododesmus* (*M.*) zelandicus (Gray, 1843)	*Monia zelandica*
[383]	W1 W3 W6 W39	C18 P12 (0-15)
385	*Lucinoma galathea* Marwick, 1953	*L. galatheae* [*sic*]
		C29 (94) -
386	*Divaricella* (*Divalucina*) *huttoniana* (Vanatta, 1901)	-
	[Dekker & Goud, 1995: 120, fig. 16 (distribution) as *Divalucina cumingi* Adams & Angas; see also Beu & Maxwell, 1990: 342; and Luckens, 1972b re. New Zealand distribution, ecology etc.]	
	W6 W21	C15 C20 C28-C31 C38 P6 (0-94)

386	*Thyasira peroniana peregrina* (Iredale, 1930) -	- C29 C31 (22-94)
387	*Genaxinus cookianus* Fleming, 1950 -	- C28 C29 C31 (22-94)
388	*Diplodonta* (*Zemysina*) *globus* (Finlay, 1926) -	*Zemysina globus* Finlay, 1926 C15 C24 C28 C38 (30-50)
388	*D.* (*Z.*) *striatula* (Finlay, 1926) W3 W12 W27	*Zemysina striatula* Finlay, 1926 C14 C18 C23 C36 C38 P1 (0-43)
388	*Felaniella* (*Zemysia*) *rakiura* (Powell, 1939)	*Zemysia rakiura* Powell, 1939 C20 C23 C24 (20-38)
388	*F.* (*Z.*) *zelandica* (Gray, 1835) W9 W27 W38	*Z. zelandica* (Gray, 1835) C14-C16 C20 C22-C24 C31 C32 C38 (0-43)
389	*Melliteryx parva* (Deshayes, 1857)	- C13 C16 C23 C24 C38 C49 P1 (0-43)
389	*Lasaea hinemoa* Finlay, 1928 W9 W27	- {C11 C16 C49 P6 (0) {*L. rossiana vexata* Finlay, 1928 {C16 C49 (0)
390	*Borniola decapitata* (Powell, 1939)	*Rochefortula decapitata* Powell, 1939 C16, Waitangi *fide* Powell, 1979: 390 (0)
391	*B. reniformis* (Suter, 1908) W10 W36	*Rochefortula reniformis* Suter, 1908 C11 C13 C16 C24 C31 C38 C49 P2 (0-43)
391	*Arthritica bifurca* (Webster, 1908)	- P5 (10)
393 E	*Myllitella vivens pinguis* Marwick, 1928 W1 W26 W27	- C11 [in Dell, 1960: 144 as C12] C13 C15 C16 C28 C31 C32 C46 P1 (0-50)
†436 **[393]**	*Kellia cycladiformis* (Deshayes, 1839)	*Marikellia rotunda* (Deshayes, 1855) C14 C16 C23 C24 P1 (0-38)
397 E	*Mysella morioria* Dell, 1952 W39	- C16 C24 C28 (0-50)
397	*Mysella unidentata* (Odhner, 1924)	- C13 C16 C49 P1 (0-6)
†397 **[399]**	*Cyamium problematicum* (Bernard, 1896) W39	*Cyamiomactra problematica* Bernard, 1897 C13 C20 C23 C31 C32 P5 (4-33)
400	*Kidderia rakiura* Powell, 1939	- C13 C16 (0-4)

401	*Kidderia* (*C.*) *costata* Odhner, 1924 W6 W26	*Costokidderia costata* (Odhner, 1924) C13 P1 (0-5)
401 E	*Perrierina insulana* Powell, 1933 W39	- C13 C24 P5 (0-38)
402	*P. subquadrangula* Dell, 1952 -	- C16 C23 (0-33)
403	*P.* (*L.*) *turneri* (Powell, 1939) -	*Legrandina turneri* Powell, 1939 C20 (20)
403	*Neolepton antipodum* (Filhol, 1880) W39	{*Notolepton antipodum* (Filhol, 1880) {C16 C20 C23 C24 P5 (0-38) {*Notolepton sanguineum* (Hutton, 1883) {C13 C16 C20 C38 C49 P5 (0-43)
404	*Pachykellya concentrica* Powell, 1927	- C16 P5 (0-10)
406	*Cardita aoteana* Finlay, 1926 W3 W5 W6 W9 W12 W15 W24 W26 W27 W36 W37	- C14 C16 C18 C20 C23 C24 C28 C29 C31 C38 C49 D1 P14 (0-94)
†281 [**407**]	*Purpurocardia purpurata* (Deshayes, 1854) W3 W6 W17 W21 W30	*Venericardia purpurata* (Deshayes, 1854) C15 C20 C23 C24 C28 C29 D1 P6 (20-94)
407	*Pleuromeris marshalli* (Marwick, 1924) W39	- C20 C23 C24 C28 C31 C38 P5 (20-94)
408	*Condylocardia crassicosta* Bernard, 1896	- C16 C49 P1 (0)
408 E	*C. pectinata chathamensis* Powell, 1933 W26	- C16 C49 P1 (0)
408	*Condylocuna concentrica* (Bernard, 1896)	*Condylocardia concentrica* Bernard, 1897 C16 C49 P1 (0)
409	*C. torquata* (Marwick, 1928)	*Condylocardia torquata* Marwick, 1928 C16 P5 (0-10)
409 E	*Benthocardiella obliquata chathamensis* Powell, 1933	- C16 P1 (0)
413	*Nemocardium* (*Pratulum*) *pulchellum* (Gray, 1843) W30	- C15 C24 C28-C31 C38 (22-94) [see also Luckens, 1972a: fig. 2g (distrib.)]
†399* [**413**]	*Cyclomactra ovata* (Gray, 1843) W6 W8	-
413	*C. tristis* Reeve, 1854 W34	- P13 (0)
†399 [**414**]	*Oxyperas* (*P.*) *elongata* (Q. & G., 1835) W6 W8 W27	*Longimactra elongata* (Q. & G., 1835) C14 C20 C23 C24 P6 (15-38)

414	*Scalpomactra scalpellum* (Reeve, 1854) W30	- C13 C15 C20 C28 C29 C31 C38 P5 (4-94)
415	*Paphies australis* (Gmelin, 1791) W6 W34 W35	*Amphidesma* (*Paphies*) *australe* (Gmelin) P6 (0)
416 E	*P. porrecta* (Marwick, 1928) (Nukumaruan fossil, Moutapu Point)	-
416	*P. subtriangulata* (Gray in Wood, 1828) W1 W6 W8 W17, and Maunganui	*Amphidesma* (*Taria*) *subtriangulatum* (Wood, 1828) C13 C20 C31 P12 (0-22); includes the living Chathams species given by Powell as *P.* (*Mesodesma*) *subtriangulata porrecta* (Marwick, 1928)
†399 **[417]**	*Serratina charlottae* (E.A. Smith, 1885) -	*Tellinella charlottae* E.A. Smith, 1885 C28-C30 (50-94)
†399 **[417]**	*Moerella huttoni* (E.A. Smith, 1885) -	*Tellinella huttoni* E.A. Smith, 1885 C31 (22)
†399 **[417]**	*Macomona liliana* (Iredale, 1915) W6 W17 W35	- D1 P4 (0)
†399 **[418]**	*Pseudarcopagia disculus* (Deshayes, 1855) W3 W6 W24	*Zearcopagia disculus* (Deshayes, 1855) C11 C14 C16 C26 P15 (0-15)
[418]	*Gari* (*Psammobia*) *convexa* (Reeve, 1857) W6 [= *Gari hodgei* Willan, 1980b; see Willan, 1993: 44]	*Gari lineolata* (Gray, 1835) C11 C15 C31 D1 P6 (0-30) ["present, but rare ..." *fide* Willan, 1993: 46]
418	*G. (Gobraeus) stangeri* (Gray, 1843) W6 W9 W27 [See Willan, 1993: 51]	- C11 C20 P6 (0-20)
†399 **[418]**	*Hiatula nitida* (Gray, 1843) W1 W9	*Soletellina nitida* (Gray, 1843) Recorded only by A. Haylock, 1903, *fide* Suter, 1913: 1005, and Dell, 1960: 144
†399	*H.* cf. *siliqua* (Reeve, 1857) W1	*Soletellina* cf. *siliqua* Reeve, 1857 P6 (0)
[419] -	*Tellina urinatoria* Suter, 1913 [See Willan, 1993: 91]	*Ascitellina urinatoria* (Suter, 1913) C15 C20 C23 C24 C28 P5 (10-50)
420	*Gaimardia f. forsteriana* Finlay, 1926 -	- C13 C16 C22 P8 (0-4)
423	*Dosinia maoriana* Oliver, 1923 W6	- C15 C24 P6 (30-38)
424	*Tawera marionae* Finlay, 1928	- F1
424	*T. spissa* (Deshayes, 1835) W6	- C15 C23 C24 C29 C31 C38 P7 (22-94)

425	*Protothaca crassicosta* (Deshayes, 1835) W6	- P6 (0)
†401 **[425]**	*Irus* (*Notirus*) *reflexus* (Gray, 1843) W6 W7 W9 W27	*Notirus reflexus* (Gray, 1843) C14 C18 C26 C31 C43 D1 D3 P4 (0-22)
†401 **[426]**	*Ruditapes largillierti* (Philippi, 1849) W6 W9	*Paphirus largillierti* (Phillipi, 1849) C11 C49 D3 P6 (0)
†400 **[426]**	*Austrovenus stutchburyi* (Gray in Wood, 1828) W6 W34 W35	*Chione* (*A.*) *stutchburyi* (Gray, 1828) C11 C24 C33 D5 P13 (0-38)
427 *	*Dosina zelandica* Gray, 1835 W6 - See "Comments"	-
†401 **[428]**	*Corbula* (*A.*) *zelandica* Q. & G., 1835 -	*Notocorbula* (*A.*) *zelandica* (Q. & G.) C23 C24 C28 P6 (0-50)
428	*Hiatella arctica* (Linnaeus, 1767) W6 W7 W9 W26 W27	*H. australis* (Lamarck, 1818) C14 C18 C28 C29 C43 P4 (0-94)
429	*Panopea smithae* Powell, 1950 W6 W8 W30	- C24, Owenga *fide* Powell, 1933 (0-38)
†401 **[429]**	*Barnea* (*A.*) *similis* (Gray, 1835) W1 W6 W8	*Anchomasa similis* (Gray, 1835) C43 P4 (0-4)
429	*Pholadidea tridens* (Gray, 1843) W3 W8	- C43 (4)
431	*Cleidothaerus albidus* (Lamarck, 1819) W6 W28	*C. maorianus* Finlay, 1927 [i.e. 1926] D3 P6 (0)
432	*Myadora antipodum* E.A. Smith, 1880	- C29 (94)
433	*M. subrostrata* E.A. Smith, 1880	- C15 C20 C23 C24 C28 C29 C38 (20-94)
433	*Offadesma angasi* (Crosse & Fischer, 1864)	- P7 (0)
†401 **[433]**	*Thracia vitrea* (Hutton,1873) [*T.* (*Hunkydora*) *australica novozelandica* (Reeve, 1859) in Powell, 1979: 433-434]	- C23 C28 C38 (33-50)
435	*Haliris setosa* (Hedley, 1907)	- C24 C28 C29 (38-94)

CEPHALOPODA

439	*Spirula spirula* (Linnaeus, 1758) W27	- P4
440	*Sepioloidea pacfica* (Kirk, 1882)	- C25

441	*Nototodarus sloanii* (Gray, 1849)	*N. sloanei sloanei* [*sic*] (Gray) C22
444	*Octopus maorum* Hutton, 1880	- C16 P4 (0)
444	*Robsonella australis* (Hoyle, 1885)	- C23 (33)
444	*Argonauta argo* (Linnaeus, 1758)	- F1
445	*A. nodosa* Solander, 1786 [Waitangi, according to local people and collectors "usually about the month of May"]	- C49 P15

COMMENTS

1. Checklists -

Island groups, particularly if distant from an accepted faunal province, exert a fascination for scientists of all disciplines because of the possibility of the development of an endemic component in the fauna. The history of investigation of the molluses of the Chatham Islands truly reflects this. In fact, after having studied the molluses obtained by the Chatham Islands 1954 Expedition as well as analysing the work of Hutton, Suter, Finlay and Powell, Dell concluded in 1960: "The proportion of endemic species, and the peculiar characteristics of the Chathams molluscan fauna due to the elements missing as much as to those present makes the [Moriorian] province as distinct as any in the New Zealand region." Such a conclusion, of course, merely whets the appetite for future visitors in search of the shells of the Chatham Islands!

The first list of molluses found at the Chathams seems to be as included by Hutton (1873) in his "Catalogue of the Marine Mollusca of New Zealand", subsequently revised in 1878. Various visitors to the Chathams during the late 1800s such as Henry Travers, Charles Traill and others, as well as local collectors including some of nine daughters of notable resident Archibald Shand, provided material for the records given by Henry Suter in his 1913 Manual. Some other records of note resulted from the visit in the summer of 1896/7 of Dr Hugo Schauinsland. Elliot Dawson who has been making a study of Schauinsland and his Pacific Voyage (see, for example, Dawson & Dawson, 1958) tells me that Schauinsland, then Director of the Übersee Museum in Bremen had an arrangement for free passage with the North German Lloyd shipping company enabling him to make extensive scientific cruises and transport large amounts of material for the museum. He collected a great amount of geological, botanical and biological specimens on the islands of Cook Strait and at the Chathams. Most of his Chathams molluscan records (e.g. *Maorichiton schauinslandi* (Thiele, 1909)) were reported by various authors in papers dealing with other faunas but one or two (e.g. Bergh, 1900 and Wissel, 1904) were in the expedition series itself. Berg's paper (in which he records *Pleurobranchus aurantiacus*, *Fiona marina*, and a species of *Archidoris*) is the authority for Suter's (1913) inclusions as queried by Finlay (1928: 262).

Dr W.R.B. Oliver, subsequently Director of the Dominion Museum, collected some molluscs in December 1909 (which were included in Dell's 1960 report and others by Ponder, 1965). The Otago University expedition of 1924 included the palaeontologists Allan and Marwick who later wrote up the fossil molluscs and brachiopods. It was Finlay, however, who, although not able to be a member of that expedition, wrote the first detailed paper on the Mollusca of the Chatham Islands based largely on what the members of the expedition could collect for him.

Powell's visit in 1933 (accompanied by Charles Fleming, then aged 16, destined to become Sir Charles and an authority on molluses himself) saw another paper produced, largely naming new species but also discussing some of the other faunal province's shells found there. Powell recorded 256 species.

The major Chatham Expedition in 1954 led by G.A. Knox included R.K. Dell as the molluscan specialist as well as a team of other marine biologists. Dell's first results, dealing with the deeper water collections, were incorporated into his monograph on the archibenthal molluses of the New Zealand Region published in 1956, and a few new records were put in a separate paper (Dell, 1956a). The scaphopods collected were incorporated into his New Zealand revision (Dell, 1957a). The shallow water fauna, that under under 100 fathoms (i.e. 182 metres) was published in 1960. A summary of the early molluscan highlights was given as an appendix to Knox's general account (Dell, 1957b).

Any later groups visiting the Chathams would certainly save themselves much time in the field by taking taking photocopies to work on of Finlay 1928, Powell 1933, and Dell 1960.

Since its publication in 1960, Dell's checklist has been subject to the usual name changes, and my present list here is a consideration towards updating it. Dell said that his list increased the known molluscan fauna to 320 species. Our list offers 336 names. We have included 16 species as new records. Ponder's 1965 work on the Eatoniellidae has added some further species from the Chatham Islands 1954 Expedition since 1960, and I have documented these also. This new Chatham Islands checklist, with its page references to Powell's 1979 manual as well as to the geological treatises of Beu & Maxwell (1990) and Campbell and others (1993), as well as incorporating name changes from such recent work as Bruce Marshall (1995) on *Calliostoma* should provide a new working basis. Our records are largely from beach collecting but they complement the 1954 records which were largely from offshore trawling or dredging.

2. Finlay's records [i.e. F1] -

Dell (1960: 156) listed 10 species recorded by Finlay (1928) but which did not appear to have been collected since. We located three of those species, hence confirming their presence. In present terminology they are:

Calliostoma selectum [1960 as *Maurea cunninghami pagoda*]

Siliquaria weldii [1960 as *Pyxipoma*]

Xymene plebeius [as *X. plebejus*]

Dell continued: "It is probable that some at least of these are forms which only occasionally reach the Chathams from the mainland, and whose occurrence will therefore be sporadic."

Calliostoma selectum did not appear as a beach shell, but only in hauls of scallops from 30 to 50 fathoms from Taupeka Point east to Kaingaroa. The scallop trawls in Hanson Bay did not produce *C. selectum.*

Siliquaria weldii was found by us as one specimen in shell sand at Okawa Point. However, a long-lost craypot from 30 fathoms had been hauled ashore at Port Hutt, and among the bryozoans and other encrusting organisms was a colony of *S. weldii.* Mere luck to be in the right place at the right time!

Xymene plebeius was only found as dead specimens, but these occurred close to the Owenga wharf area and again at a rocky headland south of the Owenga Shellbed (= Owenga Shelly Sand).

Regarding another of Finlay's species, *Zegalerus crater* Finlay, 1926, Powell (1979: 148) stated: "Chathams shells are bleached and beach worn, and possibly derived fossil." The locality given is "Kaingaroa", but I question the accuracy of that, especially since others had collected shells on Finlay's behalf. We scoured around the Kaingaroa area on several occasions, but there did not appear to be any Nukumaruan derived fossils anywhere. *Zegalerus crater* shells would disintegrate quickly in those tides, yet there were no solid Nukumaruan shells, e.g. *Xymene mutabilis*, to indicate any fossil outcrops nearby. Finlay himself listed only two specimens, both beachworn, and referred to the species as a Nukumaruan fossil. Hence, *Zegalerus crater* should be deleted from the checklist of Recent New Zealand Mollusca.

3. Our new records -

As indictated by an asterisk in my checklist, they are:

Callochiton kapitiensis Mestayer, 1926

Rhyssoplax canaliculata (Quoy & Gaimard, 1835)

Scissurella fairchildi Powell, 1933

Cirsonella cf. *varicosta* Powell, 1940

Pupatonia cf. *atoma* Ponder, 1965

Larochella cf. *toreuma* Powell, 1927

Lamellaria cerebroides Hutton, 1883

Ranella australasia blacki (Powell, 1954)

Charonia lampas capax Finlay, 1927

Alcithoe wilsonae (Powell, 1933) - Owenga beach, derived Nukumaruan fossils

Xymene mutabilis (Marwick, 1928) - Owenga beach, derived Nukumaruan fossils

Macrozafra cf. *nodicincta* (Suter, 1899)

Oamaruia (*Zeadmete*) cf. *trailli* (Hutton, 1873)

Evalea sabulosa (Suter, 1908)

Perna canaliculus (Gmelin, 1791)

Dacrydium pelseneeri Hedley, 1906

Atrina pectinata zelandica (Gray, 1835)

Cyclomactra ovata (Gray, 1843)

Dosina zelandica Gray, 1835

Eleven of these new records are species large enough to be seen while beachcombing; 8 of them have been sorted out of culch from craypots (the chitons) or else shell sand. With two buckets of shell sand which I yet have to sort, there will be an enormous number of species to identify. Some may prove to be further new records, and other are likely to be already on the joint checklist. However, rather than delay the present account of our work, I hope to discuss them in a future article.

Alcithoe wilsonae and *Xymene mutabilis* as Nukumaruan derived beach fossils have not been counted as new records of Recent shells but as collectors can pick them up on Owenga Beach they are included here.

4. Endemic species -

Dell (1960: 155) listed 49 endemic species, but at least 9 of those are now considered invalid, either as synonyms or found eleswhere. The 9 affected are:

Icoplax chathamensis Dell

Montfortula chathamensis Finlay

Trichosirius inornatus chathamensis Finlay

Buccinulum waitangiensis Powell

Buccinulum (*Evarnula*) *characteristica* Finlay

Cominella ellisoni consobrina Powell

Xymene traversi traversi (Hutton)

Marinula chathamensis Finlay

Lasaea rossiana vevata Finlay.

Apparently several of the remaining 40 endemic species are also under review, but there should still remain a hard core of undoubted endemic species. In defining a faunal province conside-

ration can be given to other factors too, and the surprising absence of very common mainland species can help to mark apart a zone.

5. Frequency fluctuations/updatings -

Dell (1960: 156-157) remarked: "Fluctuations in the abundance of individual species may well occur and it also appears probable that odd specimens of mainland species will crop up on the Chathams from time to time so that any faunal list will be subject to emendation. These remarks may apply to some of the species from Finlay's account ... To supply a factual basis for such discussions any future investigators in the area should search carefully for these forms."

Hence it is worth adding our observations now concerning the frequency of various species.

Dell listed 16 species "common on the mainland but are only recorded as rare shells from the Chathams", some known from only one or two specimens. Concerning 9 of these 16 species of "rare" shells:

(1) *Ostrea sinuata* [now *Tiostrea chilensis* (Philippi), according to Alan Beu] is trawled by the sackful off Kaingaroa, and also Hanson Bay.

(2) *Mytilus edulis aoteanus* [now *M. aoteanus*] is the most plentiful bivalve around Blind Jim's Creek area in Te Whanga Lagoon.

(3) *Monia* [now *Pododesmus*] *zelandica* occurred at four localities, but they are reasonably fragile shells to find on a beach. The best pair came out of a *Calliostoma tigris* shell from a craypot in 30 to 35 fathoms off The Forty Fours.

(4) *Macomona liliana* was well represented at ocean beaches and in Te Whanga Lagoon, but the latter specimens were small in size and more fragile.

(5) *Mactra rudis* [in Dell, 1960: 156, but as *C. tristis* on p. 144; now *Cyclomactra tristis*] was found at each visit to Blind Jim's Creek in Te Whanga Lagoon.

(6) *Anchomasa* [now *Barnea*] *similis* occurred in three areas. Between Owenga wharf and the Owenga Shellbed many mudstone boulders washed ashore contained numbers of huge *B.* (*A.*) *similis*, *Irus* (*N.*) *reflexus*, and lesser numbers of normal size *Pholadidea tridens*.

(7) *Neothais scalaris* [now *Thais orbita*], although listed from only four localities, was not uncommon when watched out for. The problem was that *Lepsithais lacunosus* was everywhere in such numbers and such a huge size that, at first, the *T. orbita* were confused with them. The *L. lacunosus* Bruguière, 1789 are the huge form originally known as *L. youngi* Finlay, 1928 until synonymised in 1960 by Dell. Okawa Point specimens are exceptionally large and answer to Finlay's description of *L. youngi*.

(8) *Paphirus* [now *Ruditapes*] *largillierti* was plentiful as single valves in the Owenga Shellbed area. They were in good condition but brown or grey, so could be derived fossils from a Nukumaruan seam.

(9) *Lima zealandica*, as stated, was rare, with only one juvenile valve among bryozoans from 30 fathoms, and a live adult specimen from 70 fathoms, 45 miles morth of Kaingaroa.

Some further comments regarding fluctuations of other species are -

(1) Dell (1960: 156) stated - "Powell (1933) recorded *Cantharidus opalus cannoni* as common throughout the Chathams. The Chatham Islands 1954 Expedition found this a very rare shell indeed." Exactly 40 years later we found this to be plentiful everywhere we went, except in Port Hutt or Te Whanga Lagoon.

(2) "Conversely *Montfortula chathamensis* seems to have been commoner in 1954 than it was in 1933." (Dell, 1960: 156). Once we learnt its habitat it was no longer a rarity for us in 1994.

At Port Hutt and Taupeka Point individuals lived beneath rocks in midtidal pools. At Cape Pattison and Kaingaroa little groups hid in shady crevices below midtide level; the shells are so small they would have virtually no tolerance to the full heat of the sun if the rock became hot and dry.

(3) " .. typical *Austrofusus chathamensis* was very rare ... as was *Lepsithais squamatus*: ... elsewhere [than] at Owenga ... ". (Dell, 1960: 154). In 1994 we found large numbers of both species at Taupeka Point and Okawa Point in particular, but less at Matarakau Point. *Austrofusus glans* was uncommon, except at Owenga. Live *A. chathamensis* came from Okawa Point (craypot, 20 fm), off The Forty Fours (craypot, 30-35 fm), and in south Hanson Bay, off Owenga (scallop trawler, 34-35 fm). These are now treated as "formae" of *glans* in Campbell *et al.* (1993).

(4) *Lepsithais squamatus* Hutton, 1878 was not taken live in any manner. Dell (1960: 133) synonymised it with *L. lacunosus* Bruguière, 1789. Normal New Zealand measurements he gave as 30 x 21 mm. Finlay in 1928 named the spectacular Chathams form as *L. youngi*, giving the holotype measurements as 53 x 33 mm. We found that Okawa Point produced the biggest shells and in the greatest numbers. The broad spiral cords, with the intervening channels of equal width filled with axial lamellae, make this a handsome shell, and totally unlike the Stewart Island specimens from Ringaringa. It seems unfortunate that such a distinctive form has been synonymised with *L. lacunosus* as although they inhabit " an open coast" (rough to violent) they are not "rather smooth with linear grooves." However, they are indeed variable, and Dell probably saw only the smaller Owenga shells and not the larger Okawa Point ones.

(5) *Penion chathamensis* (Powell, 1938) - As a Chatham Islands shell this species is incredibly rare and normally is trawled from the Chatham Rise at 200 fathoms. Powell gave "Kaingaroa" as the type locality, but once again that must have been a specimen swept off a Kaingaroa fishing boat. My local specimens are only from scallop trawlers at 35 fathoms off Taupeka Point and from a craypot in 30 to 35 fathoms off Okawa Point (from my neighbour's sons).

(6) *Alcithoe wilsonae* (Powell, 1933) - Once again Powell's supplier must have been lucky to find a specimen as good as the holotype washed up on Owenga beach. Like Don's *Fusitriton* it must have been thrown or cleaned overboard.

Fishermen are surprisingly interested as well as observant and frequently have unusual shells stashed away on their boats. The *Charonia* from The Forty Fours had been on board some time; the superb *Semicassis powelli* had been taken ashore, and we struck it lucky with *Alcithoe wilsonae* on board two vessels. I have preserved the body of the fine specimen from the craypot 40 miles offshore in 70 fathoms. Another live-taken one was smellier. If such a shell gets too bad and is heaved overboard in port that makes another erratic record.

(7) Buccinulids - These are just too complicated to discuss - note also Dell's remarks [on pages 151-152] on this topic!. A perusal of his 1960 checklist will show how many subgenera and species were considered to be found at the Chathams. In the 1994 column of my new list is their equivalent under Ponder's classification. The variation within each species is considerable without habitat factors causing other variations in growth of the shell; for example, sheltered waters in a deep bay such as Port Hutt or Whangamoe, or the relatively sheltered reef in the cove at Waitangi, or the turbulent waters off the various points and headlands. Live-specimens were very scarce, even by scuba although beach specimens were common. Only at Port Hutt where *Buccinulum vittatum bicinctum* occurs, were there midtidal live specimens in any number, and they were the very light and very dark colour forms.

(8) *Lepsiella scobina* -

L. s. scobina (Quoy & Gaimard, 1833): This was recorded at Pitt Island and Kaingaroa in 1954 and at Owenga in 1933. We found it at Owenga, Kaingaroa, Matarakau, and two other localities.

L. s. albomarginata (Deshayes, 1839): Powell did not record it but Dell did, at Owenga and Waitangi. Our only record was in midtidal rocks on the rock platforms at Matarakau Point, where I took 6 live specimens as a sample. Strangely, there were no *albomarginata* washed up on the drift line yet there were 7 empty *scobina scobina* on the drift line, so their habitat was obviously away from *albomarginata*. A closer inspection is required on the next visit! Given their variability, one wonders if they are just ecotypes or formae rather than subspecies, as to be valid subspecies both would not occur sympatrically.

(9) *Xymene ambiguus* (Philipp, 1844): These were present in quantity only at the Owenga Shellbed, where their multiple forms rivalled *Cominella n. iredalei*. At one extreme were the two forms of Recent *ambiguus*, ranging through to the two extremes of the Nukumaruan fossil *X. mutabilis* (Marwick, 1928). Fleming's (1966) "Marwick's Illustrations" shows some of the range of *X. mutabilis* (Plate 102, figs 1238, 1239, 1241) until it merges into Recent *X. ambiguus*.

The *X. mutabilis* forms are fairly obviously fossil, but then the *X. ambiguus* forms have the usual options of peat-stained fossil, peat-stained Recent, clean Recent or clean fossil. *Xymene ambiguus* is still living out from Owenga, as the Hanson Bay scallop trawler brought in a living specimen, already looking like a fossil externally but with the animal inside.

Dell (1960: 156) listed 21 characteristic mainland species strangely absent from the Chathams. We located only two of them -

(1) *Mytilus* [now *Perna*] *canaliculus*. Paired shells were washing ashore at the southern end of Petre Bay. It is quite possible that these represent a relatively new arrival since 1960, when shipping poured into the Chathams for the crayfish and paua booms. A mussel farmer friend assures me the *Perna canaliculus* living around the Cook Strait ferry terminal area in Wellington have travelled across the strait as spat in pipe openings. Apparently spat settle in some vents and have to be blown out. A Chatham Island fisherman told me that *Perna* sometimes were hooked up in craypots off Okawa Point, but we did not ourselves see any there.

(2) *Dosinula* [now *Dosina*] *zelandica* Gray, 1835: Finlay (1928: 276) was aware that Suter (1913) had recorded *D. zelandica* from the Chathams, but gave no details. I found a large single valve, with the concentric lamellae in very good condition, at the Owenga Shellbed beach. As this species is also a Nukumaruan fossil it is unsafe to assume that the species is still living there, but this beach record is worth noting here as no other party listed it from 1924 to 1994.

6. Owenga Shellbed (= Owenga Shelly Sand)* -

Owenga wharf is at the southern end of Hanson Bay, and the shellbeds are about one mile north where Te One Stream enters the sea. The close position of the rocky headland, the slightly modifying effect of a partial reef protecting that portion of the coast, and the current of the stream itself, combine to form an area where the most desirable shells seem to wash ashore. Te One Stream is strongly discoloured from the peat country further inland. A deep lagoon is formed by the breakers creating a shingle bar across the mouth, but this would be swept clear

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* Dell (1960: 154) referred to the Owenga Shell Bed as just north of Owenga and geologically in part a Pleistocene one. To avoid confusion with the "Owenga Formation" of Hay *et al.*, 1970, the new official name is now "Owenga Shelly Sand" (Campbell *et al.*, 1993: 158).

when the stream is in flood. The following points emerge - 1. This background is important because many Recent shells, flung up into the peat waters, become stained brown and thus have the same colouration as the Nukumaruan fossils at Moutapu Point, further to the north. The interaction of the stream and the waves gives a platform area where shells can be flung up at the highest storm time. The only undamaged "*Cominella nassoides consobrina*" which Powell named occur there, before they get swept out to sea to come back in again as damaged specimens; 2. The presence of *Xymene mutabilis* Marwick, 1927 as a derived fossil, and four damaged specimens of *Alcithoe wilsonae* (with varying 4 or 5 plaits on the columella) are certainly not Recent. *Alcithoe wilsonae*, and the appearance of some of the *Xymene ambiguus*, *Ruditapes largillierti*, and perhaps the one valve of *Dosina zelandica*, suggest that a stratum of Nukumaruan age is being eroded by the Te One Stream, but at the time I failed to follow the stream inland among the low bluffs which enclose it; 3. Apart from derived Nukumaruan fossil shells, peat water stained Recent shells, there are the fresh shells being carried ashore too. The occasional beautiful *Cominella nassoides iredalei* still contains the animal and its operculum. Large and beautiful *Gari convexa* [formerly *hodgei* of Willan] were plentiful here, but nowhere else. *Gari stangeri* was uncommon but available as very heavily built paired shells. *G. stangeri* occurred at other beaches too. One of the two *Cabestana tabulata* [formerly *C. waterhousei*] found here still retained a little periostracum, so is a Recent shell. Okawa Point also yielded a third specimen at storm tide level; 4. Many Recent shells here, at Okawa Point, Taupeka Point, and Matarakau have the appearance of fossils, and are mistaken as such. The peaty nature of many areas, right down to the storm tide level, ensures that shells flung high up in the wildest storms become peat-stained. Such shells can be reclaimed by the sea after another storm and redistributed into another shellbank, which can give the illusion of being fossil or subfossil. The particularly steep nature of these gravelly beaches, with flat platforms which accumulate shells only on highest wild storm occasions, ensure that many shells become very worn by rolling up and down.

NOTES

Powell **28** -

1. *Chiton pelliserpentis* Quoy & Gaimard, 1835: One specimen of the form previously known as *C. sinclairi* Gray, 1843 was found under a rock in a low tidal pool inside Port Hutt. Powell (1979: 28) commented - "It has been suggested that there is only one variable species, but the two occupy different stations, and it is significant that only *pelliserpentis* occurs at the Chatham Islands." Suter (1913: 35) listed *C. sinclairi* as a Chatham species, as well as *C. pelliserpentis* (p. 33), but gave no details. Apparently *C. sinclairi* has now been synonymised with *C. pelliserpentis*. Our new record of *Callochiton kapitiensis* was a total surprise, although I have it from Stewart Island, since Powell did not list it as found south of Cook Strait. *Rhyssoplax canaliculata* was not unexpected, but as only 10 mm or less, could easily be overlooked in the general rubbish attached to craypots.

Powell **37** -

2. *Haliotis virginea morioria* Powell, 1938: Although empty shells were widespread at 13 locations, the living animals were rare. Apart from one live one which Don found by scuba, our only live-taken shells came from Blue Cod stomachs from the Kaingaroa fish factory. Apparently the cod swim into large baited cages set at 25 to 30 fathoms off Kaingaroa.

Powell **38** -

3. *Montfortula rugosa* (Q. & G. 1834): These apparently fragile shells have been turning up, unbroken, as shell sand is being sorted. At Port Hutt and Taupeka Point they occurred individually beneath rocks in midtidal pools. At Cape Pattison and Kaingaroa they were either in pools or in crevices below midtide where they would not be subject to dessication.

Powell **61** -

4. *Calliostoma pellucidum moriorum* Powell, 1946 [now *C.* (*M.*) *waikanae* Oliver, 1926]: Powell listed "Owenga beach" as his type locality, but surely that must have been swept overboard from an Owenga fishing vessel being cleaned down. Dell's only record is from 70 fathoms in Petre Bay. Our only records are live-taken shells from 30 to 50 fathoms from scallop trawlers or craypots, or from a Blue Cod stomach (Mrs T. Henderson).

5. *Calliostoma selectum* (Dillwyn, 1817): Discussed under "Finlay's Records". Again only a deep water record. All specimens were from 30 to 50 fathoms between Taupeka Point and Kaingaroa. They appear to live in a colonial situation judging by their numbers.

6. *Calliostoma tigris chathamense* (Dell, 1950) [now *C.* (*M.*) *tigris* (Gmelin, 1791]: Apart from the type locality, Mangare Island off Pitt Island, Dell listed only Owenga and Port Hutt beaches. The latter record of Port Hutt is interesting as we found none there, beach or alive, and Don and Donald used scuba down to 100 feet. Two local fishermen told us that there are "no tiger shells around Point Napper, Port Hutt region, and the nearest are The Sisters to the north of Cape Pattison." Like all the local fishermen we spoke to, they knew their shells, and one of them had worked for a month with Ken Grange around the Bay of Plenty. The range of *C. tigris* is from one fathom, our station W3, to craypots at 35 fathoms off The Forty Fours, to scallop trawlers at 30 to 50 fathoms. Youths in Waitangi who saw us in our wet suits volunteered that "Taupeka Point was the best place for tiger shells, just below low tide."

7. *Calliostoma punctulatum* (Martyn, 1784) [now *C.* (*M.*) *granti* Powell, 1931]: Widespread as a beach shell, and we got one from a craypot from 30 to 35 fathoms off The Forty Fours.

Powell **160** -

8. *Semicassis* spp. [formerly *Xenophalium*]:

These appear to have a limited distribution along the eastern half of the northern coast of the Chathams, with Powell's record of a beach specimen at Wharekauri, our two beach specimens at Taupeka Point (typical *S. pyrum pyrum*), to scallop trawler specimens from Taupeka Point to Kaingaroa (30 to 50 fathoms) with the as yet known eastern limit of Point Munning, near Kaingaroa, from craypots in 35 fathoms.

Powell **164** -

9. *Cabestana spengleri* (Perry, 1811): Common and very widespread.

Powell **164** -

10. *Cabestana tabulata* (Menke, 1843) [formerly *C. waterhousei*, *C. w. segregata*, and *Septa tabulata tabulata*]: Don's Okawa Point specimen extends the range to both extremities of Hanson Bay, with 3 now known from the Owenga end (including Powell's 1933 specimen).

Powell **166** -

11. *Argobuccinum pustulosum tumidum* (Dunker, 1862): Extremely common and widespread, and very variable in shape from elongate to broad and squat. The craypot specimen from 30 to 35 fathoms off The Forty Fours represents the easternmost record for this subspecies, so it is now in the collection of the Institute of Geological and Nuclear Sciences in the care of Alan Beu.

Powell **167** -

12. *Rancila australasia* (Perry, 1811): This new record for the Chathams is of the form *R. a. blacki* Powell, 1954, from a scallop trawler in 30 to 50 fathoms, again from Mrs T. Henderson.

Powell **167** -

13. *Fusitriton magellanicus laudandus* Finlay, 1926 [formerly *F. retiolus* (Hedley, 1914)]: Powell gave the general range from 20 to 330 fathoms. Beu (1978: 24) listed 4 beach specimens, including a broken portion collected by Winston Ponder at Waikanae.

Don found a specimen in very good condition in the cove by Owenga wharf. Like other normally deep water species recorded from Owenga and Kaingaroa, this *Fusitriton* would most probably have been swept out of the scuppers or cleaned out of a craypot once the vessel was near or in port at Owenga. Their normal depth range, according to local fishermen, is 30 to 40 fathoms, from Blind Reef, north Hanson Bay, to Kaingaroa lighthouse in 28 to 30 fathoms. That seems to cover only rocky ground areas, with no records from scallop trawlers.

Powell **168** -

14. *Charonia lampax capax* Finlay, 1927: Broken specimens at Owenga and Taupeka Point were new records, and they led me to question two fishermen who could clearly distinguish between *Cabestana spengleri* and *Charonia*. On our second visit one of the fishermen triumphantly produced a live *Charonia lampax capax*, the first recorded live specimen, and now proudly owned by Doreen Burr. Since then a friend has produced an unbroken dead adult specimen from a craypot set in 70 fathoms 20 miles east of The Forty Fours. Don extracted the stomach contents of the dead *Charonia*. They had the appearance of partly-digested bryozoans so I showed them to Dr Dennis Gordon of NIWA for comment. He referred me to Dr Helen Rotman who confirmed them as echinoderm spicules, which is what they would have expected as a food source.

15. *Charonia lampas rubicunda* (Perry, 1811): Suter (1913: 303), under the name *Septa rubicunda*, recorded it as a Chatham Islands species based on a specimen in the Otago Museum (Beu, 1970: 217). However, the expeditions of 1924 (Finlay, 1928), Powell 1933, and 1954 (Dell, 1960) did not produce any *Charonia*, so it was omitted from the 1960 checklist, and Beu concluded - "Although it seems quite possible that *C. l. capax* occurs there, no valid records are yet available."

Suter knew of records of *C. l. rubicunda* only as far south as Kawhia and Napier. Don W. Watson and Donald Watson have collected live *C. l. rubicunda* around Kapiti Island (Watson, 1991: 11) and in Tory Channel, Queen Charlotte Sound (Watson, 1995: 7). Don says that where *capax* occurs so does *rubicunda* but much rarer, so I have tentatively restored Suter's record of *C. l. rubicunda* to the Chathams list to remind people to watch for it. Suter's specimen and record could possibly be valid.

COMINELLA NASSOIDES SUBSPECIES

The article by Gibbs and Scott (1989) on the *Cominella nassoides* complex is very useful both for data and illustrations. My comments here may add to the response which they requested.

Although *Cominella nassoides* is so very variable, the subspecific names already in use provide a reference point for discussing the overall *nassoides* complex, and the subspecific names also act as sampling points along the clinal distribution. Apart from the geographic variations, there are differences between populations inhabiting turbulent seas or relatively sheltered waters, and even collection date affects the aspect of the shells. My *Cominella n. haroldi* from 40 fathoms off Chalky Inlet and from 35 fathoms off Dusky Sound agree with those in the coloured photograph given by Gibbs and Scott; they have solid, interiorly-corded lips, and were live collected in January 1964 and December 1969 respectively. However, the specimens from 35 fathoms off Windsor Point, between Puysegur Point and Green Island, must have been in a growing phase when collected on 18 December 1967, because the shells are lightweight, and the fragile growing lips give a quite different appearance.

My five specimens collected by Peter Cresswell off Mokohinau Island, South West Cape, Stewart Island, in December 1966 have lips in the fragile growing state. The spires are unusually tall and the shells exceptionally slender. The term ? "*nodicincta*" as applied to the pair in the Gibbs & Scott photograph could not be less appropriate to my five from the same locality.

This wide variation makes description of even *C. nassoides nassoides* difficult. Specimens from Ringaringa Nugget area on Stewart Island are large, solid shells, presumably able to withstand rough open seas. Immediately across the isthmus is a sheltered bay facing into gentler waters, where the shells are noticeably lightweight, smaller, and have much weaker sculpture. Once, in that bay, about 9 p.m. on 20 January 1970, I was wading knee-deep on bare sand when suddenly a ripple announced the tide's turning, whereupon scores of living *nassoides* emerged from hiding and began crawling on the surface. Considering the numbers of them, their mortality rate appeared low as the tidal drift did not indicate any *nassoides* were living in that bay.

The situation at the Chatham Islands: -

At the Chathams the picture is even more confusing as both Recent and fossil forms occur. At Owenga both, to some extent, get mixed up together and, as discussed concerning *C. n. nassoides*, there is tremendous variation within Recent and fossil, far greater than most collectors realise.

Gibbs & Scott (1989:3) stated - "The subfossil species from the Chatham Islands, *iredalei* and *consobrina*, seem more closely related to specimens from further south than they do to the closest living species, *otakauica*."

My comments are -

(1) *C. n. iredalei* is a living species, not extinct.

(2) *C. n. consobrina* is also not a subfossil but an extinct fossil, and I shall show that it is really one of two extremes of the Nukumaruan *C. n. ellisoni* Marwick, 1928.

(3) *C. n. ellisoni* in one extreme ribbed form which Powell named *consobrina* is very close indeed to *C. n. otakauica* which I have from 80 fathoms in the Sorenson Canyon, east Otago.

(4) Having disposed of *C. n. consobrina* as being *ellisoni*, *C. n. iredalei* remains as an extremely variable living subspecies combining both the southern clinal limit form *C. n. nodicincta* (Martens, 1878) but also *C. n. otakauica* Powell, 1946. The biological tension between these two forms, the former short spired, very broad, strongly nodular, the latter with a tall spire, narrower body, and the nodules appearing as strong axial ribs, gives rise to the variation within *C. n. iredalei*. Unfortunately we are not going to be around to see what the breeding populations of the squat and tall elements ultimately evolve into, and that is assuming that no further invasions of larvae arrive to upset the current partial combination of *nodicincta* and *otakauica* which we refer to as *C. n. iredalei*.

- *Cominella nassoides iredalei* Finlay, 1928 -

With over 500 specimens from Owenga beaches alone, I should have been hard put to it to decide upon the holotype had I been describing it as as new species.

Only 11 specimens were brought back to Finlay by the 1924 expedition, but from them he made an excellent selection for holotype and paratype as illustrated in his Plate 39.

Holotype: height 53 mm, diameter 31 mm. This represents the tall spired form of *iredalei* in which the spire is equal to or greater than the height of the aperture. Because the spirals are weaker and closer together, the axials appear as ribs but fade out by the middle of the body whorl. The ribs thus have the appearance of *otakauica*, but the massive, wide body is typical of *nodicincta*.

Paratype: height 46 mm, diameter 31 mm. In his original description, Finlay stated - "Spire lower than aperture." That is true of his paratype but not true of the holotype, but probably he was considering an average of his 11 shells. The paratype is also massive, and shows axial nodules like *nodicincta* rather than axial ribs as in the holotype.

Powell's 1979 "Mollusca" - Powell's Plate 40 Figure 3 does not appear as representative of *C. n. iredalei* as it could have been. It shows a very squat form, with rather smooth sculpture, and approximates to the squat extreme which Finlay selected for his paratype. Finlay's holotype, a strongly ribbed shell, is far more typical of *C. n. iredalei*.

Powell's measurement of 56 mm given on Plate 40 could be misleading too, as 56 mm is exceptional, the usual shell rarely reaching 50 mm, and that squat form as illustrated would be even less.

Sample measurements -

To overcome the idea that *C. n. iredalei* is a subfossil and limited to the Owenga Shellbed, I am appending sample measurements, particularly of live-taken shells. These are my own totals only: e.g. for Taupeka Point my total could be multiplied by four or five to include the specimens collected by the others in our party. For Port Hutt the grand total was only two subadult shells, found by Doreen Burr and myself. They were bleached white, the so-called fossil colour, but no possible shellbeds are there. However, the fish factory was nearby, and I suspect that these two specimens were swept off decks, like Dell's record of a *Calliostoma tigris chathamensis* there. The nearest undoubted colonies of *C. n. iredalei* are on the mid-northern coast, Cape Young and Taupeka Point.

Localities and measurements -

			size (mm)	
"Classic" localities ...				
Finlay, 1928 "Chatham Is."	11	-	53 x 31 46 x 31	holotype paratype
Powell, 1933 Owenga	-	-	53 x 31	
Powell, 1979 Owenga; Hanson Bay	-	-	56 x 31.5	

Our localities ...				Ribs
Port Hutt beach (an exception?)	2	dead	34 x 13	12
Cape Young (Craypot, 15 fm)	1	live	46 x 26	12
Taupeka Point, beach	42	dead	56 x 27 max.	13-17 (av. 15)
off Taupeka Point (trawler, 30 fm)	1	live	57 x 26	14
Matarakau Point, beach	1	dead	ap. ht 27	1
Kaingaroa lighthouse (28-30 fm)	1	live	39 x 20	16

Te Wakaru Point	2	live	50 x 26	14
(40-45 fm)			39 x 22	25
Okawa Point	4	live	47 x 25	14
(18-20 fm)			47 x 24	16
			51 x 27	15
			46 x 25	13
Hanson Bay south	6	live	49 x 27	14
(30-35 fm)			49 x 25	18
			46 x 25	17
			46 x 25	13
			41 x 22	17
			38 x 20	12
				(av. 15)
The Forty Fours	1	live	36 x 20	14
(30-35 fm; furthest record east)				

From an inspection of the number of ribs, counted always for the penultimate whorl, the average appears to be 15 ribs. However, averages can be dangerous as they mask the great variability of the number of ribs, and the actual range of ribs among live-taken shells is from 12 to 18. In addition, the ribs vary from heavy, broad ribs, to the extremely smooth Cape Young specimen from 15 fathoms which lacks any ribbing at all. The squat shape is typical of the *nodicincta* form, and what I have called "12 ribs" in the column is actually just 12 nodules representing obsolete ribs. With this 15 fathom exception, the remaining live-taken shells, from 18 to 20 fathoms at Okawa Point to 45 fathoms at Te Wakaru Point, are tall and the same width in the body whorl as my *C. n. otakaurica* from 80 fathoms in the Sorenson Canyon off Otago Heads. The *otakaurica* shells are lightweight, whereas the Chathams shells are very heavily constructed.

The next two sets of measurements are Owenga only - (a) are the 5 largest beach shells, in an attempt to reach Powell's statement of size, and (b) are 10 beach shells from Owenga selected because they still contained smelly animals when picked up.

	size (mm)	ribs
Owenga		
(a) empty	62 x 32	15
	61 x 30	16
	58 x 29	16
	57 x 29	16
	54 x 30	15
(b) freshly dead	55 x 27	16
	54 x 29	16
	53 x 27	15
	53 x 25	14 (smooth)
	51 x 26	16
	50 x 28	15

49 x 26	14 (smooth)
49 x 25	16
48 x 25	17
45 x 25	15

Although the average penultimate whorl rib count for these two categories is 15.5 ribs, again the important aspect is the variation. Their range is 14 to 17 ribs, whereas the deeper water ones were 12 to 18, but the numbers sampled are too few to be of great statistical significance.

• Owenga fossil *C. nassoides* sp.

Because the configuration of the land in front of the very low hills at Te One Stream mouth has allowed large sand deposits to be accumulated at storm level in the cove, and because of the further complication of the Nukumaruan fossils eroding and joining the Recent shells there, considerable confusion can arise as to which shells are actually fossils now further worn by beach or stream action, which shells are Recent but peat-stained in the lagoon, and which shells are Recent but may have been cast ashore for several years, then carried out to sea again by a storm, only to be returned to the beaches again. Table A now lists 10 shells which, considering all aforementioned factors, I consider to be fossil shells of the *C. nassoides* group. The shells are now chalky in appearance and all have abraded protoconchs, or even two or three whorls missing, so their heights would have been greater in reality.

Table A -	Size (mm)	Ribs
	57 x 25	14
	56 x 25	13
	55 x 26	14
[less 2-3 whorls]	55 x 28	13
[less protoconch]	55 x 30	15
[less protoconch]	54 x 28	15
	54 x 26	16
	53 x 26	15
	53 x 25	13
	52 x 25	14

These 10 shells have not been selected to "doctor" a theory, but because there is sufficient of their spires to give their heights. The Recent examples of *Cominella* at Owenga are normally in much better condition.

Of the above 10, except for the two with 28 mm width which look like typical *iredalei*, they approximate to Powell's 1933 *C. n. consobrina*, as illustrated in his paper and reproduced by Gibbs & Scott in their article.

Table B shows markedly different, but clearly fossil, *Cominella* from near the Te One Stream outlet.

Table B -

	Size (mm)	Ribs
	63 x 30	21
	60 x 30	21
	55 x 26	17
[protoconch missing]	55 x 28	20
	55 x 25	19
[protoconch missing]	54 x 28	18
[3 whorls missing]	54 x 28	17
[3 whorls missing]	55 x 25	21

These Owenga shells are very markedly different with a narrower body whorl and tall, slender spire, and they have much in common in shape with the present living ones from 18 to 20 fathoms and 45 fathoms. Despite the apparently high rib count on the penultimate whorl these specimens stand apart instantly from both Recent *iredalei* and those in Table A because in most examples the ribs have become obsolete on the body whorl, leaving only the subsutural nodules to be counted in place of axial ribs. The spiral chords remain strongly visible.

Table A specimens are an outcropping of *C. n. ellisoni* Marwick, 1928, a Nukumaruan fossil, of which the type locality is Titirangi, just to the north of the Chathams airfield where we landed. With limited time we did not go there, but on arrival I asked our courier to turn off to Moutapu Point quarry, about one minute from the airfield.

Table C gives measurements of *C. n. ellisoni* from Moutapu Point. The quarry is not much more than 40 feet above high tide mark at its highest, and the fossil bed is being opencast-mined for crushing for agricultural lime.

Table C -

	Size	Ribs
	60 x 28	16
	58 x 28	13
	55 x 27	14
	55 x 26	14
	52 x 25	14
[protoconch broken]	48 x 23	17
	37 x 19	13

Powell (1933: 206) gave the following measurements -

C. n. ellisoni 60 x 31

C. consobrina 62 (estimated) x 29, holotype (actual 60.5 x 29)

C. n. iredalei 53 x 31, holotype.

He stated that he had found three of his *consobrina* among *iredalei* at Owenga, and C.A. Fleming found one *consobrina* among *ellisoni* at *Titirangi*. *C. n. ellisoni* is illustrated as Figure 1318 in Fleming's (1966) "Marwick's Illustrations", as well as a topotype in Powell's 1933 paper. The sculpture of the shells named *ellisoni* varies, nearly as much as it does among the *nassoides* in other localities, but although the variation was sufficient for Powell to name the other extreme as *consobrina*, in reality *C. n. ellisoni* is constant in tall spire and reasonably narrow body whorl. It bears close affinities with present day *C. n. nassoides* and *C. n. otakauica.*

It almost appears that some living descendants of *C. n. ellisoni* are surviving in the much deeper waters off the northeast and east of the Chathams main island, whereas *C. n. iredalei* represents a later arrival of the *C. n. nodicincta* southern subspecies, mixing with them in the shallower waters to produce the very broad, squat form, with low spire, and nodules merged into ribs, that we refer to as *C. n. iredalei.*

Club members who consider *Cominella nassoides* to be a southern cominellid outside their collecting range may not be aware that occasionally beautiful jet black fossil specimens may be found along the coast from Paekakariki to Foxton. They will be in the same pumice driftline with *Coluzea spiralis*, *Glaphyrina*, *Murexsul*, *Poirieria*, *Buccinulum striatum*, *Aeneator marshalli*, *Pterynotus*, etc., if you're lucky enough to latch on to a good drift line. The fossil bed is somewhere out at sea, and belongs to the Castlecliffian age, some one million years back. The species in question is probably *Cominella nassoides otukauica.*

REMARKS ON SOME BIVALVIA

A. Species of *Paphies* -

1. *Paphies porrecta* (Marwick, 1928) -

The surprising feature of the *Paphies porrecta* specimens at the Nukumaruan beds at Moutapu Point is their small size, usually about 50 mm in width. All valves found were disarticulated, so perhaps had been redistributed. The largest found was exceptional being 82 x 45 mm. Powell's 1979 illustration (Plate 75, fig. 13) does not feature Marwick's fossil species. The holotype is shown in Fleming's "Marwick's Illustrations" on Plate 61 and the paratype is illustrated in Glenys Stace's (1995: 6) article in *Poirieria.*

2. *Paphies subtriangulata* (Wood, 1828) -

(a) Living specimens wash ashore in three localities to my knowledge:

i. Waitangi, beyond the Nairn River

ii. Owenga Shellbed [= Owenga Shelly Sand]

iii. Taupeka Point.

The largest paired specimen, with epidermis, at Owenga was 79 x 51 mm. Most shells seen were much smaller, and apparently there is now a total ban on collecting to prevent their stocks from being totally wiped out.

(b) Huge disarticulated valves wash ashore at:

i. Maunganui, across the consolidated dunes from the three-storey Moravian Mission stone building

ii. Owenga Shellbed [= Owenga Shelly Sand]

iii. 2 miles north of the Owenga Shellbed.

The most noteworthy feature of these shells is their solid construction and heavy weight, and the position of the umbo in relation to total shell width. The anterior end usually ranges from

33 to 37% of the total shell width. In *P. subtriangulata* the umbo in those measured occurred at 25% of the shell width.

B. North Owenga occurrences -

North of the Owenga Shellbed the coastline curves north away from the hill country, the coarse quartz sand is left behind as it merges into a fine greyish-white sand. With no hills as a backstop, the high storm waves have been able to encroach inland for over a quarter of a mile over the swamps. Despite the lack of any tide line to follow, we walked along the top of these sandflats until we reached a lagoon and high marram grass covered stabilised sand dunes beyond.

The high storm sand flats proved interesting as, without the rocky reefs as at the Owenga Shellbed, fewer shells were smashed in reaching the top flats. All were found as single valves but huge in size, and solid heavy shells;

i. *Pecten novaezelandiae* forma *rakiura*

ii. *Oxyperas* [formerly *Longimactra*] *elongata* (live trawled, 35 fm, only 90 x 80 mm)

iii. *Panopea smithae* (126 x 75 mm; live trawled ones at 30 fm only 78 x 46 mm)

iv. *Paphies* sp. with more central umbo

v. *Cyclomactra* [formerly *Mactra*] *ovata.* At the Owenga Shellbed I had located two umbos of this species, but two miles further north the unbroken valves were plentiful, but disarticulated. The shapes varied from almost circular, 76 x 75 mm, to oval, 70 x 82 mm. Very few were solid like the previous four species, and most of them got broken in transit to New Zealand.

vi. *Cyclomactra tristis* occurs live inside Te Whanga Lagoon, but there was no proof that these *ovata*, brown/white blue/black shells, are living in the nearby lagoon, or open sea. *Cyclomactra ovata* is listed as a Nukumaruan fossil at both Titirangi and Moutapu Point, and as two umbos were found at the Owenga Shellbed it is conceivable that these *ovata* are from the same source as the Nukumaruan fossils which are intermixed at Owenga. Considering the fragility of most of these *C. ovata* it does not seem that they can have been transported very far. This area requires further investigation too!

CONCLUSION

I was pressured into contributing an article about our Club trip, but the more I've written the more I realise the danger of putting anything into print in case of errors of interpretation. Ideally another trip should follow, to test and perhaps expand on these notes. As that may not happen it is perhaps better to publish now and be damned, and hope that these comments will direct the next group to profitable areas. Sorting the shell sand will occupy the rest of my life!

THANKS

To our leader, Club President Don Watson, who provided the inspiration to make this trip possible, and Donald Jr, chauffeur par excellence in the 4WD Hilux, and chef par excellence also over our evening bonfire meals;

to Dr A.G. Beu for identification of fossils and macroshells, but also for the initial stimulus when he addressed the Wellington Shell Club in 1977 after his own Chathams trip. With us I took my notes on his lecture on geology, fossil areas, endemic shells, birds and botany;

to Mr B.A. Marshall for identification of the otherwise unidentifiable microshells of the Chathams, plus his advice on the macroshells;

to Dr R.K. Dell whose monumental works of 1956 and 1960 meant that each of us could carry a working copy of his summary of knowledge of the Chathams shells;

to kind local people, especially Mr & Mrs R. Morrison, and Mrs Thelma Henderson, who welcomed us, gave us local treasures, showed us endemic parakeets, whales' teeth, and rare endemic plants;

and last, but certainly not least, to our skilled editor, Elliot Dawson, for his task in coping with a very difficult article and its layout, with checking of accuracy of current shell names and their authors too. There will never be any time when all names are agreed upon and static, so no excuse is offered for names being considered by some people to be "out of date."

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ERRATUM

The Editor regrets that he left out a paragraph from page 35 of the last issue of *Cookia.* In Ian Townsend's paper on the small land snails of Mana Island the following should have appeared before the "References" -

ACKNOWLEDGEMENTS

My very grateful thanks to Dr Frank Climo for identifications using his latest classification of species and genera, which is an updated version of Powell (1979). My thanks also to Ian Cooksley and Murray Efford for the loan of specimens.

REVIEW

MARSHALL, Bruce A. - "A revision of the Recent *Calliostoma* species of New Zealand (Mollusca: Gastropoda: Trochoidea). *The Veliger*, Volume 108, Number 4, pages 83 to 127, 144 figures, 11 May 1995.

Abstract: "Thirty-three Recent calliostomatids are recorded from New Zealand, ten of which are described as new. *Calliostoma* (*Otukaia*) *blacki* (Dell, 1956) is renamed due to homonymy, and the following taxa are newly synonymized: *Venustas tigris chathamensis* Dell, 1950 with *Calliostoma* (*Maurea*) *tigris* (Gmelin, 1791); *Maurea punctulata ampla* Powell, 1939 and *V. punctulata multigemmata* Powell, 1952 with *C. granti* (Powell, 1931); *V. couperi* Vella, 1954 and *Thoristella chathamensis profunda* Dell, 1956 with *C. blacki* (Powell, 1950), which is resurrected from synonymy under *C. foveauxanum* (Dell, 1950); *Zizyphinus hodgei* Hutton, 1875, *Z. ponderosus* Hutton, 1885, and *C. carnicolor* Preston, 1907 with *C. selectum* (Dillwyn, 1817); *C. undulatum* Finlay, 1923 and *C. pellucidum* (Valenciennes, 1846). Lectotypes are designated for *Trochus selectus* Dillwyn, 1817, *T. pellucidus* Valenciennes, 1846, and *Calliostoma onustum* Odhner, 1924."

This is a first-rate piece of work. It will certainly send shell collectors scurrying to their cabinets to re-write their labels. But it shows, more importantly, what can be done by innovative thinking and the application of modern techniques to elucidate a family of molluscs which, so far as New Zealand is concerned, has perplexed and confused so many shell collectors who have tried to identify their specimens from a scattering of localities.

Some brave souls might feel that they can still recognise regional forms of *Calliostoma* with which they have long been familiar. Maybe so - but, taken over the New Zealand-wide geographical coverage which Bruce Marshall has been able to examine and document so vividly, local subspecies and so-called forms and varieties will now be seen to fall into place within the overall picture of each species now established as a taxonomic entity in this paper.

The large amount of material which Bruce Marshall has been able to study has certainly provided a firm foundation for his conclusions, and the beautiful scanning electron microscope photographs of the early whorls of each species are not only scientifically convincing to back up his propositions but are art works in their own right. Wallpaper designers please take note!

I confess a vested interest in Bruce's study of *Calliostoma* since many of the deeper water specimens were collected on various oceanographic cruises in southern waters and to the Kermadec Islands which I had led over the years. Nevertheless, I have always felt out of my depth (no pun intended) when it came to identifying any calliostomatids that we sorted out from the dredge and trawl hauls. Now, thanks to Bruce's comprehensive synthesis of the genus in New Zealand waters, we can relate his conclusions about the status of each species to what our "Powell 1979" indoctrinated outlook had led us to believe we thought we knew - in other words, Bruce has now enabled us to see "the big picture", and placed us all in his debt for that. Nevertheless, we should also pause while reading his lines to pay tribute to what earlier workers had pioneered for us, notably Dell (1950) and Oliver (1926), let alone Hutton and Powell. We truly stand on the shoulders of giants as St Bernard once said.

As a reader, the only errors I have found are ones that hardly matter, except for historical accuracy, and they're not Bruce's fault either:

On page 103, under *Calliostoma megaloprepes*, New Zealand Oceanographic Stations C730 and C733 are stated to have been carried out from the mv *Viti*. This should read HMNZS *Rotoiti*, and, similarly, Station D9 attributed also to the *Viti* was done (by my team) from HMNZS *Endeavour*. I shudder to think how the old *Viti*, a much-loved ship (built in 1940 as the Governor-General of Fiji's yacht) chartered by the N.Z. Oceanographic Institute from 1959 to 1961, would have fared in the horrendous waters off Macquarie Island.

Since our members will want to relate Bruce's new scheme to the previous arrangement in "Powell 1979", I now list the species as Powell recognised them with what Bruce has done with them:

Powell page no.	POWELL, 1979	MARSHALL, 1995	Marshall page no.
60	*Maurea tigris tigris* (Gmelin, 1791) } *M. tigris chathamensis* (Dell, 1950) }	*Calliostoma* (*Maurea*) *tigris* (Gmelin)	**84**
61	*M. pellucida pellucida* (Valenciennes, 1846) }	*C.* (*M.*) *pellucidum* (Valenciennes)	**111**
61	*M. pellucida spirata* (Oliver, 1926) }		
61	*M. p. haurakiensis* (Dell, 1950) }	*C.* (*M.*) *waikanae* Oliver, 1926	**112**
61	*M. p. forsteriana* Dell, 1950 }		
61	*M. p. morioria* Powell, 1946 }		
62	*M. waikanae* (Oliver, 1926) }		
61	*M. selecta* (Dillwyn, 1817)	*C.* (*M.*) *selectum* (Dillwyn, 1817)	**108**
62	*M. turnerarum* Powell, 1964	*C.* (*M.*) *turnerarum* (Powell, 1964)	**113**
62	*M. punctulata* (Martyn, 1784)	*C.* (*M.*) *punculatum* (Martyn, 1784)	**87**
	in part [Marshall, p. 87]	*C.* (*M.*) *granti* (Powell, 1931)	**90**
62	*M. benthicola* (Dell, 1950)	*C.* (*M.*) *benthicola* (Dell, 1950)	**92**
62	*M. osbornei* (Powell, 1926)	*C.* (*M.*) *osbornei* Powell, 1926	**96**
62	*M. multigemmata* (Powell, 1957)	*C.* (*M.*) *granti* (Powell, 1931)	**90**
62	*M. spectabilis* (A. Adams, 1855)	*C.* (*M.*) *spectabile* (A. Adams, 1855)	**100**
62	*M. foveauxana* (Dell, 1950)	*C.* (*M.*) *foveauxanum* (Dell, 1950)	**100**
62	*M. megaloprepes* Tomlin, 1948	*C.* (*M.*) *megaloprepes* (Tomlin, 1948)	**103**
62	*M. blacki* (Powell, 1950) }	*C.* (*M.*) *blacki* (Powell, 1950)	**102**
59	*Thoristella chathamensis profunda* Dell, 1956 }		
63	*Otukaia blacki* (Dell, 1956)	*C.* (*Otukaia*) *alertae* Marshall, new name	**117**
63	*Fautor onustus* (Odhner, 1924)	*C.* (*sensu lato*) *onustum* Odhner, 1924	**118**

Bruce has appended a checklist of the Recent Calliostomatidae of New Zealand as he has recognised them. I add this here (updated from his later 1995 New Caledonia paper) for the convenience of our readers -

Calliostomatidae - Calliostomatinae

Calliostoma (*Maurea*) *antipodense* Marshall, new species

C. (*M.*) *aupourianum* Marshall, new species

C. (*M.*) *benthicola* (Dell, 1950)

C. (*M.*) *blacki* (Powell, 1950) (= *couperi* Vella, 1954 = *profunda* Dell, 1956)

C. (*M.*) *eminens* Marshall, new species

C. (*M.*) *foveauxanum* (Dell, 1950)

C. (*M.*) *gibbsorum* Marshall, new species

C. (*M.*) *granti* (Powell, 1931) (= *ampla* Powell, 1939 = *multigemmata* Powell, 1952)

C. (*M.*) *jamiesoni* Marshall, new species

C. (*M.*) *maui* Marshall, new species

C. (*M.*) *megaloprepes* (Tomlin, 1948)

C. (*M.*) *osbornei* Powell, 1926

C. (*M.*) *pellucidum* (Valenciennes, 1846) (= *undulatum* Finlay, 1923 = *spiratum* Oliver, 1926)

C. (*M.*) *penniketi* Marshall, new species

C. (*M.*) *punctulatum* (Martyn, 1784)

C. (*M.*) *regale* Marshall, new species

C. (*M.*) *selectum* (Dillwyn, 1817) (= *hodgei* Hutton, 1875 = *ponderosus* Hutton, 1885 = *carnicolor* Preston, 1907)

C. (*M.*) *simulans* Marshall, new species

C. (*M.*) *spectabile* (A. Adams, 1855)

C. (*M.*) *tigris* (Gmelin, 1791) (*chathamensis* Dell, 1950)

C. (*M.*) *turnerarum* (Powell, 1964)

C. (*M.*) *waikanae* Oliver, 1926 (= *morioria* Powell, 1946 = *forsteriana* Dell, 1950 = *haurakiensis* Dell, 1950)

C. (*Otukaia*) *alertae* Marshall, new name (*blacki* Dell, 1956)

C. (*sensu lato*) *kopua* Marshall, new species

C. (*Selasatele*) *onustum* Odhner, 1924

Bathyfautor rapuhia new genus, new species Marshall, 1995

Fautrix candida new genus, new species Marshall, 1995

Calliostomatidae - Thysanodontinae

Thysanodonta aucklandica Marshall, 1988

T. wairua Marshall, 1988

Carinastele coronata Marshall, 1988

C. fugosa Marshall, 1988

C. kristellae Marshall, 1988

Five other calliostomatines are known from the Kermadec Islands - *Calliostoma* (*Ampullotrochus*) *xanthos* Marshall, 1995, *C.* (*A.*) *peregrinum* Marshall, 1995, *Calliostoma* (*Tristichotrochus*) *gendalli* Marshall, 1979, *C.* (*Benthastelena*) *tosaense* (Kuroda & Habe, 1961), and *C.* (*Fautor*) *consobrinum* (Powell, 1958).

Of the 10 new species recognised by Bruce Marshall, 6 have been described from off The Three Kings Islands (1 known to extend to Cape Reinga, 2 to off East Cape) in the far north,

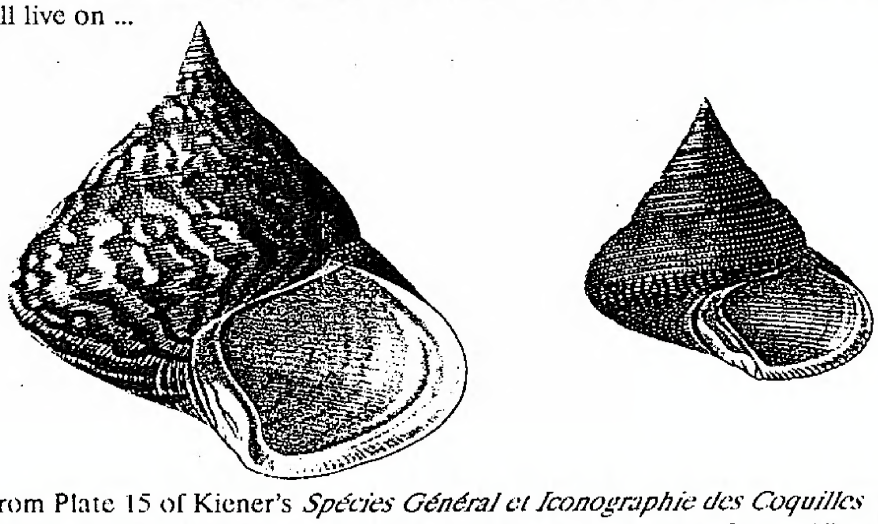
2 species from off the Antipodes Islands in the Subantarctic, 1 (named after "Maui, the legendary Maori fisherman") from Cook Strait, Chatham Rise to the northeast of the South Island, and 1 from off Cape Campbell and east Otago.

Another beautifully illustrated and comprehensive treatment of some further Calliostomatidae appeared from Bruce's hand on 29 December 1995 foillowing his New Zealand revision which was published on 11 May 1995. This second work deals with 30 species of Callostomatidae (27 of which are new species) from the French deep sea expeditions off New Caledonia based on some 600 dredge and trawl stations. This paper is particularly informative on the problems of the classification of the Calliostomatidae and contains a helpful figure of the standard spiral cord numbers and a nice discussion about the protoconch and teleoconch morphology and the radula. Of particular interest for New Zealand readers is the inclusion of several species from north of New Zealand, allowing an updating of the New Zealand checklist of Calliostomatidae published by Bruce as part of his New Zealand revision (p. 127). His "New genus A, new species (Marshall, 1995)" and "New genus B, new species ... " are now *Bathyfautor rapuhia*, new genus, new species (from N.Z. Oceanographic Institute Stations U 582, off The Three Kings Rise, and P 8 on the Wanganella Bank) and *Fautrix candida*, new genus, new species (from off The Three Kings and NZOI Station I 96 on the south Norfolk Ridge) respectively. From his Kermadec Islands list, his "*Calliostoma* new species A" is now *C.* (*Ampullotrochus*) *xanthos* new species (from NZOI Stn K 826, haul 3, off Raoul Island [collected by me, quite unknowingly, in 1974!]) and his "*Calliostoma* new species B" is *C.* (*A.*) *peregrinum* new species (although not from the Kermadecs, but NZOI Stn Z 2098, northern Three Kings Rise).

The reference to this second paper is - Marshall, B.A. 1995: Calliostomatidae (Gastropoda: Trochoidea) from New Caledonia, the Loyalty Islands, and the northern Lord Howe Rise. Résultats des Campagnes Musorstom, Vol. 14. *Mémoires. Musém National d'Histoire Naturelle*, Paris 167: 381-458, figs 1-158. Bruce has kindly given copies of both of these fine works to the Wellington Shell Club's library.

Finally, I must say that I think it's particularly pleasing that some of the names proposed for the new species recognised by Bruce Marshall commemorate amateur shell collectors whose activity has contributed to the success of his study, notably Dave Gibbs, Peter Jamieson, and Bob Penniket. Coincidentally, and regrettably, they are all three recently deceased. But their names will live on ...

E. Dawson



Figures from Plate 15 of Kiener's *Spécies Général et Iconographie des Coquilles Vivantes...* , Vol. 7. Paris, 1847: Fig. 1 [left] "Troque grenade (*Trochus granatum* Chemn.)" = *Calliostoma* (*Maurea*) *tigris* (Gmelin, 1791) *fide* Marshall, 1995: 84; Fig. 2 [right] "Troque grenu (*Trochus punctulatus* Martyn)" = not of Martyn, 1784 but *Calliostoma* (*Maurea*) *pellucidum* (Valenciennes, 1846) *fide* Marshall, 1995: 111.

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